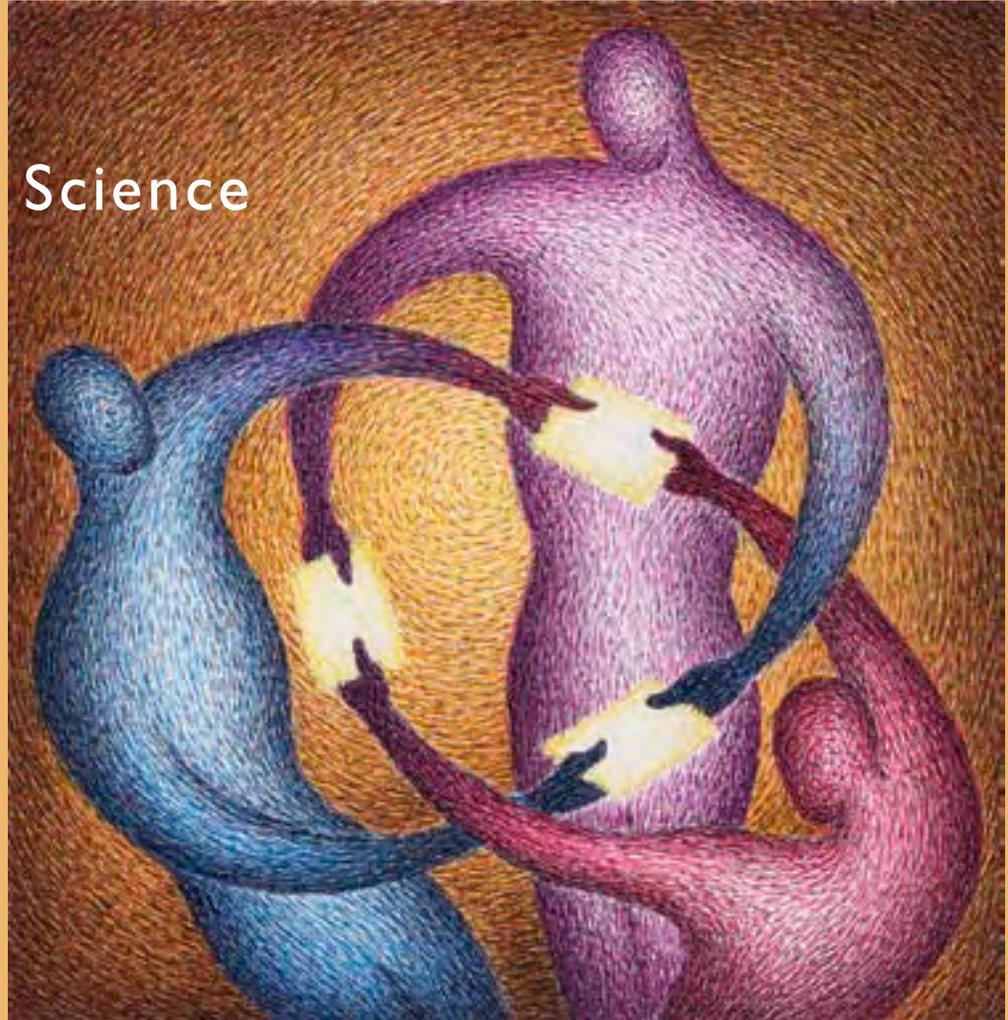


# Translational Science



# The Life Span Institute at a Glance

Research-based solutions for the challenges of human and community development, disabilities and aging

## Who

### **Investigators, research and administrative staff, graduate and postdoctoral students**

The LSI brings together 150 scientists who are affiliated with 20 academic departments to study human development from its genetic origins through the final stages of life. These investigators are supported by 165 research and administrative staff members, including 85 graduate research assistants.

The Institute has two affiliated multidisciplinary graduate/doctoral programs, the Child Language Doctoral Program and the Gerontology Graduate and Doctoral programs, as well as several post-doctoral training programs.

## What

### **Research, training, technical assistance, direct services and leadership**

Most of the easy problems in the behavioral and the biological sciences have been solved. Today the important problems are increasingly found and solved at the intersection of many disciplines. The Life Span Institute stands at such a convergence.

At the Life Span Institute we know that our mission—to develop knowledge about human and community development, disabilities and aging—can only be achieved by problem-driven collaborations across many disciplines.

The Life Span Institute's 13 centers and Peruvian affiliate currently have 150 active programs and projects that constitute basic and translational research, training, direct services, consultation and technical assistance.

Last year, 40,000 Kansans benefited from the Institute's direct services, training and technical assistance.



The Schiefelbusch Institute for Life Span Studies  
The Robert J. Dole Human Development Center  
The University of Kansas  
1000 Sunnyside Avenue, Room 1052  
Lawrence, Kansas 66045-7555  
785 864-4295 TTY 785 864-5051  
fax 785 864-5323  
lsi.ku.edu

**Editor:** Karen Henry

**Writers:** Karen Henry and Mary-Margaret Simpson

**Design:** Darren Moore, Titus d, Co.

**Photography:** Diane Guthrie, Guthrie Photography

**Contributors:** Paul Diedrich, Jessica Black-Magnussen

## When History

The Schiefelbusch Institute for Life Span Studies was established in 1990, when the distinguished 67-year-old Kansas Bureau of Child Research joined with the Gerontology Center and other new research groups to form one of the premier research institutes in the world on human and community development, disabilities and aging. The Bureau was directed for 35 years by Richard L. Schiefelbusch for whom the Institute is named. Dr. Schiefelbusch's appointment to lead the Bureau in 1956 was the beginning of its modern era.

The Institute has had three directors, Stephen R. Schroeder, from 1990 until his retirement in 2001, Steven F. Warren, from 2000 to March 2008, when he was appointed vice provost for research and graduate studies at KU, and John Colombo, who became the Institute's third director in September 2008.

## Where

### **Administrative and Research Locations**

The Institute's central office is in the Robert Dole Human Development Center at the University of Kansas in Lawrence with components at the John T. Stewart Children's Center and Malott Hall. The Institute also operates in Kansas City at the Children's Campus of Kansas City (Juniper Gardens Children's Project), at the University of Kansas Medical Center's Robert E. Hemenway Life Sciences Innovation Center and the Center for Child Health and Development and at the University of Kansas Edwards Campus (Kansas Center for Autism Research and Training). A major center is also located at the Life Span Institute in Parsons, Kansas.

Much of the work of the Institute is accomplished in and directly benefits underserved Kansas City neighborhoods and rural Kansas counties. Several projects are collaborations with researchers in other parts of the state, region, country and world, and are regional, national or international in scope.

## How Funding

The Life Span Institute attracts more combined federal, state and private dollars than any other designated research center at the University of Kansas, drawing \$28.7 million in sponsored project support in FY 2009-10. Each state dollar brought in \$7.91 external dollars this fiscal year.





John Colombo, Director  
The Schiefelbusch Institute  
for Life Span Studies

**“Good clinicians listen to their communities to identify important problems and good basic scientists listen to clinicians to learn about how those problems are manifest outside of the laboratory.”**

During the 1990s the National Institutes of Health introduced the concept of *translational science* and encouraged researchers to conduct their science in a way that more rapidly moved from the scientist’s “bench” to the clinician’s “bedside.” This concept was part of NIH’s desire to accelerate progress in science so that science would be focused more directly on, and could be more readily applied to, the problems of human welfare and society.

Translational science is the theme of the Life Span Institute’s 2009-2010 Annual Report, because, quite frankly, LSI scientists have been well ahead of the curve on this point for some time. Indeed, since the seeds of the Institute were sown in the mid-1960s, the research conducted by our investigators has always been directly relevant to the problems of human development and society, and that research has always made a real difference to the people of Kansas, to the nation and to the world. The work that our investigators do is rooted in basic-science knowledge and theory about behavioral phenomena—genes, physiology, biology and brain function. This work is readily translated to applied problems, such as the early identification of developmental disabilities or the development of efficacious interventions for managing and treating various disorders. The last step in the translational process is to engage the larger community by communicating and educating that constituency about what science brings to society.

These translational steps are obvious anywhere and everywhere when you look at the work done at LSI. But what you will also find is that the translational process doesn’t only run one way. It’s not just bench-to-bedside-to-community—the process also works when good clinicians listen to their communities to identify important problems and good basic scientists listen to clinicians to learn about how those problems are manifest outside of the laboratory. We think the cover illustration of this year’s report illustrates the reciprocal nature of this process quite well.

I am proud to say that the scientists at LSI have always understood this give-and-take between society and science. LSI is hardly “lost in translation.” We’re not lost at all. In fact, we are pathfinders and have been for a very long time.

I hope you enjoy this year’s report. It is a pleasure and an honor to bring it to you again.

Lost in Translation?

## LSI on winning streak for Regents research awards



Steven M. Barlow

For the third year in a row, an LSI investigator has received a prestigious Higuchi-KU Endowment Research Achievement Award, which recognizes outstanding research accomplishments by faculty at Kansas Board of Regents institutions.

Steven M. Barlow, professor of the speech-language-hearing department, received the 2009 Dolph Simons Award in Biomedical Sciences. Barlow is internationally recognized as a leading scholar in orofacial and laryngeal neurophysiology and biomedical aspects of speech sensorimotor processing over the life span. He is currently conducting a five-year clinical trial to further assess his intervention, the NTrainer system, to prevent later language and cognitive disability in infants whose sucking behavior is disrupted by prematurity or other conditions. The NTrainer has been shown

to rapidly train infants in normal sucking behavior and is now available for use in hospitals through KCBiomedix, Shawnee, Kan.

Charles Greenwood, director of the Juniper Gardens Children's Project, received a Higuchi award in 2008 and Ann Turnbull, co-director of the Beach Center on Disability, won in 2007. Previous LSI winners are Montrose Wolf in 1983, Beatrice Wright in 1984, Mabel Rice in 1991, Susan Kemper in 1993, Stephen Fawcett in 1996 and Rhonda Montgomery in 2000.

The Higuchi awards program was established by Takeru Higuchi, a former KU distinguished professor, and his late widow, Aya. Four awards are given annually. Each award comes with a \$10,000 grant for ongoing research.

## Scientist honored for service to Kansas

Stephen B. Fawcett, director of LSI's Work Group for Community Health and Development, was honored with one of three Steeples Service to Kansas Awards for 2009.

Don Steeples, the Dean A. McGee Distinguished Professor of Applied Geophysics and senior vice provost for scholarly support, and his wife, Tammy, established the award in 1997. The award recognizes outstanding service by KU faculty to other Kansans.

Fawcett, who joined the KU faculty in 1975, is the Kansas Health Foundation Professor of Applied Behavioral Science. In recent years, his efforts led to the Work Group being designated as a World Health Organization Collaborating Centre. Fawcett and his colleagues developed the Community Tool Box ([ctb.ku.edu](http://ctb.ku.edu)), a 7,000-page online resource to build healthier communities used by health and human development workers in Kansas and throughout the world. He currently oversees a five-year National Institutes of Health project to promote health in Latino neighborhoods in Kansas City.



Stephen B. Fawcett

He is co-author of nearly 200 articles and book chapters that feature his participatory research with partners in state agencies, foundations and community organizations across the state, nationally and internationally.



Liliana Mayo (left) receives the national Peruvian Defensoria del Pueblo award from National Ombudswoman Beatriz Merino (right) along with former United Nations Secretary General Javier Pérez de Cuéllar (in background).

Liliana Mayo, founder and director of the Centro Ann Sullivan del Perú, the Life Span Institute's Peruvian affiliate, was honored with a Defensoria del Pueblo (Ombudsman) award April 16 in Lima, Peru. The award recognizes those who have made a significant contribution to the promotion, defense and strengthening of the constitutional order, the institutionalization of democracy and the validity of human rights.

Mayo is internationally known for changing the way children with autism and other developmental disabilities are treated and educated in Peru and for creating a unique and dynamic model "School for Families" that has been replicated in several other countries.

## Mayo receives highest Peruvian humanitarian award

She was recognized by her country along with no less than the former United Nations Secretary General Javier Pérez de Cuéllar. Pérez de Cuéllar, who recently toured CASP, now refers to Mayo as his "twin" according to Stephen Schroeder, retired LSI director and professor emeritus. A KU graduate and KU Distinguished Service Citation awardee in 2003, Mayo was also featured as the subject of the cover story in the May 2010 *Kansas Alumni* magazine.

This year Mayo, along with Schroeder and others, was awarded a highly competitive National Institutes of Health Fogarty International Award to undertake an unprecedented study of disability identification and early intervention in Peru (see page 8). The study hopes to find a cost-effective early preventive intervention that can be replicated widely in those countries without legal entitlements for disability.

The CASP model, which trains families to help prepare their children with intellectual disabilities to live, even work, in the larger world, is being replicated in countries including Brazil, Argentina, Bolivia, Spain, Ecuador and Guatemala. One hundred CASP students are employed in 33 companies. In the last two years, 10,000 parents and professionals have been trained in 22 Peruvian provinces and in ten Latin America and European countries through an innovative Internet-based distance education program.

Mayo has also been honored with Spain's Queen Sofia Award for Rehabilitation and Integration, Peru's Order of the Sun (in the degree of Commander) and with the Peruvian Congressional Medal of Honor in recognition of her culture-changing contribution.



The Kansas Center for Autism Research and Training (K-CART) awarded its third annual pilot discovery grants in July 2010 to one University of Kansas and three University of Kansas Medical Center researchers. K-CART, launched in July 2008, is committed to supporting intramural pilot projects to attract researchers—especially younger scientists—and new collaborations between established investigators to autism spectrum disorder (ASD) investigation.

This is made possible by a combined KU/KUMC five-year \$1 million contribution. Funding for pilot research is scarce but data from such studies is often critical to win external support from government and private funders. The award winners competed for the \$25,000-\$40,000 grants that recognize original empirical research that will advance scientific knowledge and contribute to the overall competitiveness of K-CART for external funding.

“K-CART is committed to the discovery of new information and dissemination to impact people with autism. The awardees exemplify collaboration among disciplines and across campuses to address the complexities and challenges in autism spectrum disorders,” said Debra Kamps, K-CART director.

## Autism center awards pilot discovery grants

### 2010 awardees:

**Juan Brusés**, associate professor of anatomy and cell biology, will study the effect of cytokine levels, part of the immune system response, on the developing brain in a mouse model.

**Winifred (Winnie) Dunn**, professor and chairperson, occupational therapy education, and Lisa Mische-Lawson, research assistant professor, occupational therapy education, will test the effectiveness of a sensory processing intervention with children with ASD.

**Rene Jamison**, assistant clinical professor, will evaluate an intervention aimed at improving social communication in adolescent girls with ASD.

**Nancy Brady**, assistant professor, speech-language-hearing, and **Christa Anderson**, research associate, will develop a nonverbal method to test language comprehension using eyetracking technology and eye movements.

### 2009 awardees:

Last year's recipients were **Merlin Butler**, professor of psychiatry in the Department of Psychiatry and Behavioral Sciences at the KU Medical Center, and **Qian Li**, research assistant professor of pharmacy and toxicology. Butler and a multidisciplinary team is studying the immune profiles of children with ASD and, specifically, their cytokine levels. Li's research is exploring whether or not epigenetic alterations and autistic-like behaviors are caused by environmental factors early in life.

### 2008 awardees:

**Kathryn Ellerbeck** and **Jill Jacobson** are exploring the possible effects of hormones and the environmental toxin Bisphenol A on the expression of genes that may be related to autism. Ellerbeck is a developmental-behavioral pediatrician at KU Medical Center's Center for Child Health and Development. Jacobson is a professor of pediatrics/

endocrinology at the University of Missouri-Kansas City School of Medicine.

**Cary Savage**, associate professor of psychiatry and behavioral sciences at KU Medical Center, **Christa Anderson**, research associate at KU, and **John Colombo**, professor of psychology and Life Span Institute director, are examining pupil and neural responses in children with autism spectrum disorder.

**Kathy Thiemann-Bourque**, assistant research professor, is studying how to increase communication of children with autism spectrum disorder with their typical peers through assistive communication devices.

**Winifred (Winnie) Dunn**, professor and chair of the Department of Occupational Therapy Education at KU Medical Center, is identifying and validating methods for behavioral assessment that reflect brain activity of individuals with ASD, focusing on sensory processing, temperament and brain activity.



The Children's Campus of Kansas City (CCKC)/Educare of Kansas City held its grand opening on June 8 attended by some 400 community members, well-wishers and representatives from public and private supporters.

The \$15.5 million, three-story, 72,000-square-foot building at 444 Minnesota Ave., Kansas City, Kan, will be a new national model for collaborative research, education and service and house three longstanding programs: the LSI's Juniper Gardens Children's Project (JGCP), Project EAGLE Community Programs of the KU Medical Center and the Family Conservancy.

The CCKC will support the educational success, health and wellbeing of more than 1,000 children and families annually in Kansas City, Kan.

The CCKC will also function as a major regional research and training center led by the LSI's JGCP, a research group that pioneered what is now called translational science: conducting research with and in the community.

Research shows that investments in the early years have high rates of return while interventions at later ages in the life cycle have low economic returns, JGCP Director Charles Greenwood explains. "People who participate in enriched early childhood programs are more likely to complete school and much less likely to require welfare benefits, become teen parents or participate in criminal activities."

Although the campus focuses on children and their families in its immediate community, the research generated at the CCKC will influence policy and practice across the country, said Greenwood.

Project EAGLE will manage the Educare of Kansas City center, which is part of the 11-center Bounce Early Learning Network established by the Buffett Early Childhood Fund and Ounce of Prevention Fund with local partners.

Project EAGLE also directs the KCK community's Early Head Start program, Healthy Start Program, Healthy Families Program and Connections Centralized Intake and Referral System. Research and evaluation are embedded in these programs as well, such as JGCP's evaluation of Early Head Start and Early Reading First.

The Family Conservancy will provide mental health services, parenting education, crisis intervention, assistance to overcome poverty and professional development services.

Truly a public-private partnership led by CCKC CEO Martha Staker, substantial monetary, in-kind and moral support have come from many community sources. Major donors include the Barton P. and Mary D. Cohen Charitable Fund; J.E. and L.E. Mabee Foundation; Local Initiatives Support Corp.; Unified Government of Wyandotte County, Kansas; Buffett Early Childhood Fund Broadway Square Partners; Hall Family Foundation; JE Dunn Construction; Ewing Marion Kauffman Foundation; George Kaiser Family Foundation; Lafarge; and William T. Kemper Foundation. Individual KCK families have contributed \$12,000. Dickinson Financial Corp. donated the land. Former KU Chancellor Robert Hemenway donated \$50,000 on behalf of the University of Kansas.



The Children's Campus of Kansas City/Educare of Kansas City

## Building on translational science in KCK

**“Research shows that investments in the early years have high rates of return while interventions at later ages in the life cycle have low economic returns.”**

A gene that has been associated with dyslexia has now been linked to another persistent disability that first surfaces in childhood – Specific Language Impairment.

LSI investigator Mabel Rice was the first to report that a variant in a gene on Chromosome 6—KIAA0319—is a likely culprit in Specific Language Impairment (SLI). Children with SLI, which affects about 7 percent of five to six-year-olds, have no other developmental disorder, hearing loss or brain injury but are late to begin talking. When they do talk, they use simpler sentence structure and immature grammar. Some also develop reading problems.

## Gene is likely culprit in language, speech and reading problems

The finding is important because it shows that genes can affect language development and that other problems—such as speech production disorders and reading delays—are, in all likelihood, related.

Rice and a team of researchers from across the globe studied 322 individuals, including children with SLI, their parents and other family members. Participants completed diagnostic tests to determine the presence of SLI behavioral traits. Their genetic code was then scanned to identify mutations that family members had in common.

They found that variations in KIAA0319 had a strong effect on SLI language traits, dyslexia and speech sound disorders—problems that persist throughout adulthood. “It’s an exciting time because we’re beginning to see discoveries that have been 10 years in the making,” Rice said.

She emphasized that families should know that while SLI traits may be inherited, early intervention can offset its impact on language development and reading.

The study was published in the August 2009 *Journal of Neurodevelopmental Disorders*.



Mabel L. Rice

**“We’re beginning to see discoveries that have been 10 years in the making.”**

A new automated vocal analysis technology could fundamentally change how autism spectrum disorders (ASD) are identified in young children. The LENA™ (Language Environment Analysis) system could also revolutionize the study of some aspects of language itself, according to Steven Warren, one of the authors of the study reported in the July 19 online *Proceedings of the National Academy of Sciences*.

## Voice analysis may screen infants for autism

**“A new automated vocal analysis technology could fundamentally change how autism spectrum disorders are identified in young children.”**



Stephen F. Warren

“Some studies suggested that children with autism have a markedly different vocal signature, but until now, we have been held back from using this knowledge in clinical applications by the lack of measurement technology,” said Warren, professor of applied behavioral science and KU vice provost.

The LENA system, developed at the Boulder, Co. LENA Foundation, automatically counts child vocalizations recorded by a small device placed in a child’s clothing. The recordings for the study were then submitted to an automatic acoustic analysis designed by the researchers that showed that pre-verbal vocalizations of very young children with autism are distinctly different from those of typically developing children. The team was able to identify those children with ASD by their vocal signatures alone with a robust 86 percent accuracy.

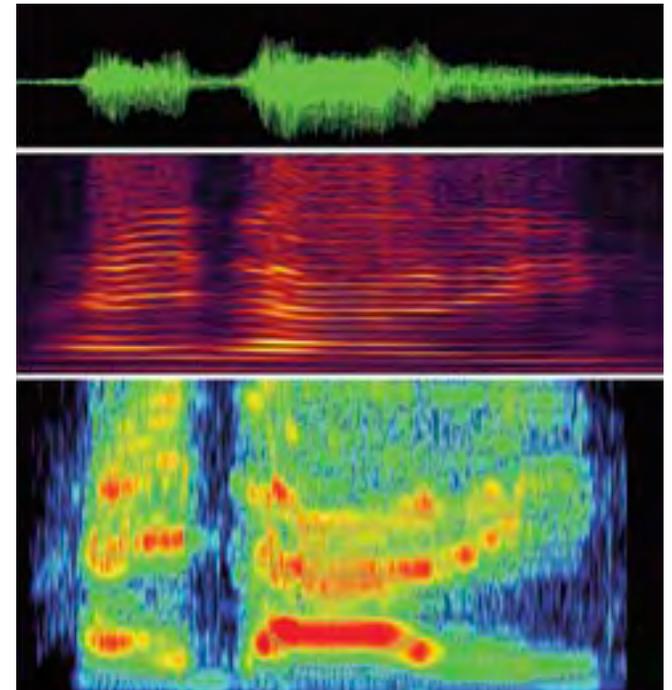
The system also differentiated typically developing children and children with autism from children with language delay.

The researchers analyzed 1,486 all-day recordings from 232 children through an algorithm based on 12 acoustic parameters associated with vocal development. The most important of these proved to be those targeting syllabification, the ability of children to produce well-formed syllables with rapid movements of the jaw and tongue during vocalization. These showed little evidence of development in the children with ASD.

The research team, led by D. Kimbrough Oller, professor and chair of excellence in audiology and speech language pathology at the University of Memphis, called the findings a proof of concept that automated analysis of massive samples of vocalizations can now be included in research on vocal development.

Although aberrations in the speech of children with autism spectrum disorders has been examined by researchers and clinicians for more than 20 years, vocal characteristics are not included in standard criteria for the screening or diagnosis of ASD, said Warren.

Warren says that children with ASD can frequently be diagnosed as early as 18 months but that the median age of diagnosis is 5.7 years in the U.S. “This technology could help pediatricians screen children for ASD and determine if referral to a specialist for a full diagnosis is required and get them into earlier and more effective treatments.”



Shown is “Hi, daddy” vocalized by a 32-month-old child with ASD: (Top) Acoustic waveform depicting vocalization amplitude; (Middle) Narrowband spectrogram detailing acoustic energy across frequencies; (Bottom) Wideband spectrogram emphasizing formant structure. Image courtesy of the LENA Foundation.



Former Life Span Institute Director and Professor Emeritus Stephen Schroeder is exuberant these days. As the principal investigator of a new National Institutes of Health Fogarty International Center grant, he is fulfilling a lifelong dream to research disability prevention and oversee the first early intervention program for disability in Peru with LSI's Peruvian affiliate, Centro Ann Sullivan del Perú (CASP).

## Schroeder returns to direct project of a lifetime

LSI began collaborating with CASP in 1983 and made affiliation official in 1990. At first, KU offered scientific expertise to CASP. This collaboration was so successful that Schroeder now hopes that there will be a way of packaging the family-oriented lifelong education CASP model for the United States.

With the Fogarty grant, Schroeder can continue his lifelong engagement with an old foe: severe aberrant behaviors in people with intellectual disabilities.

Aberrant behaviors or self-injury, aggression and stereotyped behavior, are some of the most devastating neurodevelopmental disorders (ND), Schroeder explains, because they lead to deteriorating health and, sometimes, early death, prevent community integration and job retention and impair learning and socialization.

The project will screen 1000 infants and toddlers ages 6 to 36 months. Schroeder expects to find 250 who are at risk for ND, about half of whom are also likely to be at risk for aberrant behaviors. The project will follow 100 or more of them at six-month intervals for 12 months with in-depth interdisciplinary pediatric, psychoeducational, behavioral, neurological and genetic assessments to see if the children develop aberrant behaviors.

The results of this early identification program will be followed by a five-year project grant on early preventive intervention of aberrant behavior building on the existing excellent psycho-educational program and distance learning network at CASP.

Schroeder proposes that they will find differences in the development of aberrant behavior due to sociocultural practices and health issues, such as uncontrolled environmental pollution, in Latin America.

“In Peru, like many other countries, there is no entitlement for disability,” Schroeder said. “We plan to develop a risk algorithm that will permit a cost-effective effort at early preventive intervention that can be replicated throughout Latin America, across the CASP distance learning network and beyond, for young children with these extremely debilitating problems.”



**“Schroeder can continue his lifelong engagement with an old foe: severe aberrant behaviors in people with intellectual disabilities.”**



Front row: Beatriz Merino, national ombudswoman of Peru; Liliana Mayo, director, CASP; former United Nations Secretary General Javier Pérez de Cuéllar. Back row: David M. Richman, professor, Texas Tech University, Stephen Schroeder.

Our national reading crisis persists despite many attempts to mitigate it: U.S. students continue to lag behind those from many countries in their ability to understand what they read — including Hungary and Bulgaria.

Much of the nation’s research agenda has been focused on improving word reading skills, but this did not translate into higher reading comprehension test scores, said Hugh Catts, professor and chair of KU’s top-rated Speech-Language-Hearing: Sciences and Disorders Department.

But now Catts and 129 other scientists from several academic fields across the country are beginning a monumental five-year \$120 million Reading for Understanding initiative funded by the federal Institute of Education Sciences.

“Reading for Understanding is an attempt to dramatically increase our knowledge about what is involved in skilled reading comprehension and how this may be taught in the classroom,” Catts asserted.

What’s more, the researchers hope to have prototypes of programs to teach reading comprehension to children through the twelfth grade based on the six multidisciplinary teams’ research at the end of five years.

Further reflecting the translational science model of community and practitioner



Hugh W. Catts

## Teaching children to understand what they read: a five-year plan

participation, participating schools’ teacher representatives will be members of the research team and help with the development and implementation of instructional packages.

“Reading comprehension is an active process in which the reader uses his or her language knowledge, background knowledge and reasoning skills to construct an understanding of the text,” Catts explains.

“In this project, we plan to provide students with the language knowledge and skills, background knowledge and motivation to be successful in this process.”

Catts is collaborating with 14 other researchers from five universities in the United States and the United Kingdom in a team led by Professor Laura Justice, a speech-language pathologist at Ohio State University. Other team members include Diane Nielsen, KU professor of education, Mindy Bridges, LSI research associate, and Tiffany Hogan, a KU speech-language-hearing graduate, now assistant professor of special education and communication disorders at the University of Nebraska-Lincoln, who will head the Nebraska team. This team will focus on children from 4-8 years of age.

**“Much of the nation’s research agenda has been focused on improving word reading skills, but this did not translate into higher reading comprehension test scores.”**





Two young brothers close in age lived in a crack house and then suffered further abuse in foster care. The older was a polite B student, the younger had multiple, intractable psychiatric problems. Why was one child resilient and the other terribly damaged by the same experiences?

That's what Yo Jackson, associate professor of clinical child psychology and child psychologist, wanted to know when she co-counseled the brothers early in her career and that's what she hopes to learn from a major five-year National Institutes of Health grant that will study what she calls the "process of resiliency" in children.

While resiliency in children has been studied for at least 50 years, it is only now that there is a statistical methodology that will allow Jackson and her colleagues to look at multiple environmental influences at the same time and over time.

Foster children and their foster parents in Jackson County, Missouri, are the focus of her study. "While the great majority of children exposed to maltreatment are never removed from their homes, foster children are those whose maltreatment has risen to a certain threshold such that they have been removed from their homes," Jackson explained.

Jackson said that the project will be able to provide those who design and implement programs for foster children with the necessary tools to be systematic about what they do. "Our project is the first step towards making meaningful change in translational research for this population by documenting the process of resiliency."

Jackson asserts that now there is a lot of trial and error, guessing and intuition about treating children who have been abused. "I'm fairly certain this study will net us quite a bit of counterintuitive results," Jackson predicted.

So who is the resilient child? Resilient children are not super children, says Jackson, and you would never guess what they had been through. "What we are really talking about is the everyday process of everyday accomplishments."

"The boy that I saw so many years ago was the older brother. He didn't really have any problems. He wasn't terrifically talented in anything. Did he have a hard time talking about his mom? Absolutely. But that's not weird or strange."

"If we can find out what that kid had or the process by which he managed his environment the way he did, maybe then we can teach it to other children. I don't know if it is even teachable, but that is my hope."

## The resilient child



Yo Jackson

**"Now there is a lot of trial and error, guessing and intuition about treating children who have been abused."**

## Meeting social-emotional needs of infants



A major grant to LSI researcher Kathleen Baggett is supporting the first efforts in the country to train teachers in child-care centers to promote the social and emotional development of infants.

Funded by the U.S. Department of Education, the project implements what decades of research have shown: infants whose social-emotional needs are unmet are less likely to be ready for school and more likely to have social-emotional problems throughout the life span.

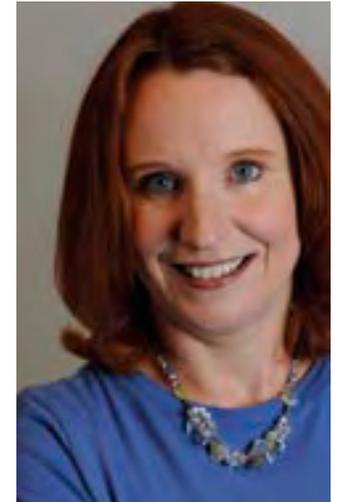
Of special concern is the lack of adequately trained early child-care teachers coupled with growing numbers of young children with social-emotional problems, Baggett said. In fact, infants and toddlers are the fastest-growing group in child care.

“Intervening earlier is better than later,” Baggett said. “Waiting for children to fail means opportunities are lost to prevent early delays from becoming future disabilities.”

Baggett, assistant research professor at the Juniper Gardens Children’s Project, and colleagues at KU, the Oregon Research Institute, Eugene, Ore. and the University of Texas Health Science Center at Houston are developing and field-testing a web-based training program where coaches in Kansas will work virtually with teachers in Kansas and Oregon. “Our web-based program will be developed with feedback from child-care stakeholders, including parents, and will allow us to test the feasibility of real-world implementation of the program in child-care centers,” Baggett said.

The project was preceded by a pilot study by Baggett and colleagues showing that in-home web-based training is effective in helping mothers improve the social and emotional development of their infants. That web-based program, Infant-Net, will be refined in the current study for child-care teachers.

“Quality is a huge concern in child-care centers today,” Baggett added. “The field desperately needs to implement training programs for those who work with the very youngest children in child care.”



Kathleen M. Baggett

**“Waiting for children to fail means opportunities are lost.”**

Almost one million preschoolers in the United States receive services under the Individuals with Disabilities Act (IDEA), a law to ensure that children with disabilities participate and progress in the same general curriculum taught to children without disabilities. But achieving the ideal hasn't been easy.

## Universal design in preschool curriculum aims to help more children progress

According to Eva Horn, professor of special education at the University of Kansas, preschools often lack a system for modifying their curriculum for children with disabilities. But a new three-year \$1.5 million grant to Horn and colleagues seeks to remedy that void.

Funded by the Institute of Education Sciences in the U.S. Department of Education (DOE), the project will develop, refine and test a comprehensive curriculum framework so children with or at significant risk for disabilities can participate and make meaningful progress in preschool.

"Historically in early childhood education, our main concern has been to make preschool fun and engaging for kids," Horn said. "We haven't thought about what things we want preschoolers to learn by the end of the year. But what if we can achieve happiness and joy at the same time we think about where we want to take them?"

Horn and colleagues at KU, Indiana University and the University of Maryland will use the Children's School Success Curriculum Model and field test a version with four-year-olds using universal design for learning (UDL) modifications. UDL calls for multiple methods to help students learn, express what they've learned and stay motivated.

"We'll ensure that the curriculum meets UDL principles so that all children show progress," Horn said. "We'll also develop procedures so teachers can individualize the curriculum and meet the learning needs of all children, with a special focus on those with disabilities."

The goal is not to bring the children with disabilities up to the same levels as children without disabilities but to ensure that they make significant progress compared to where they started, Horn explained. "Our research has shown that children who benefit the most from a high-quality curriculum are children who are the most in need—that children who are at risk actually gain the most."



Eva Horn

**“We haven’t thought about what things we want preschoolers (with disabilities) to learn by the end of the year.”**

# Training the next generation of translational researchers

As the largest designated research center at the University of Kansas, the Life Span Institute plays a pivotal role in the research mission of KU. But LSI is also a key player in the university's graduate education mission and is a fertile training ground for new generations of researchers, educators and practitioners in the behavioral sciences and related disciplines.

LSI is the administrative arm of two multidisciplinary graduate programs, the Child Language Doctoral Program and the Gerontology doctoral and graduate programs. Several LSI pre- and post-doctoral training programs also support 22 research trainees and 85 graduate research assistants.

## Child Language

The Child Language Doctoral Program prepares specialists in child language for academic scholarship and research in public and private research organizations as well as for careers in organizations that serve people with communication disorders. Two internationally recognized scholars lead the program: Director Mabel Rice, the Fred and Virginia Merrill Distinguished Professor of Advanced Studies, and Graduate Advisor Susan Kemper, the Roy A. Roberts Distinguished Professor of Psychology.

Part of the College of Liberal Arts and Sciences, the program boasts 24-affiliated faculty—some of the top researchers at KU—in the Departments of Applied Behavioral Sciences, Linguistics, Psychology and Speech-Language-Hearing.

Among the unique resources of the Child Language Doctoral Program is the Language Acquisition Studies Lab, in operation for 25 years under the direction of Rice and funded by the National Institutes of Health. For the past 20 years, Rice, students and staff have been accruing a longitudinal sample of the language development of children who were recruited as preschoolers. (See page 6 for a story on Rice's latest research on genes and language impairment.)

Graduates of the Child Language Doctoral Program have landed positions at prestigious institutions through the United States and have amassed extensive research portfolios in their own right. Graduates include:

**Ruth Watkins** (1989), Harry E. Preble Dean of the College of Liberal Arts and Sciences, University of Illinois at Urbana-Champaign

**Janna Oetting** (1992), professor, communication disorders, Louisiana State University; language editor of the *Journal of Speech, Language, and Hearing Research*

**Pam Hadley** (1993), associate professor, speech and hearing science, University of Illinois at Urbana-Champaign

**Melanie Schuele** (1995), assistant professor, hearing and speech sciences, Vanderbilt University

**Sean Redmond** (1997), associate professor, speech and language pathology and director of undergraduate studies, University of Utah

The most recent graduate of the Child Language Doctoral Program is **Jill Hoover** (2009), who was mentored by LSI scientist Holly Storkel. Hoover is now a NIH post-doctoral fellow in speech and hearing sciences at Indiana University.

## Gerontology

In 1997 KU became one of only a handful of universities in the U.S. to offer a doctoral degree in Gerontology and is still the only program in the Midwest and Rocky Mountain states. Using an interdisciplinary approach, the program trains students in the physical, psychological, social, and policy dimensions of aging, preparing graduates for academic and research careers as well as professional positions in private and public institutions and agencies serving older individuals.

Affiliated faculty include members of the College of Liberal Arts and Sciences and the Schools of Allied Health, Architecture, Design and Planning, Education, Engineering, Law, Medicine, Music, Nursing, Pharmacy and Social Welfare. David Ekerdt, professor of sociology, directs the Gerontology Center. Susan Kemper, Roy A. Roberts Distinguished Professor of Psychology, is graduate advisor.

Students have based their doctoral research on experimental and intervention studies, as well as interviews and national survey data. The topics of their dissertations have included: communication between staff and residents in nursing homes (**Kristine Williams**, 2001); aggressive behavior in persons with dementia (**Beth Nolan**, 2003); caregiver burden among spouses (**Marie Savundranayagam**, 2004); the readability of health-related materials for older adults (**Chiung-Ju Liu**, 2006); residential relocation plans and behavior (**Julie Sergeant**, 2006); job attitudes of young, middle-aged, and older nurses (**Susan Klaus**, 2006); journaling as a coping tool for caregivers (**Gillian Woods**, 2007) and end-of-life planning in younger and older adults (**Deepthi Mohankumar**, 2009).

# LSI Friends award-winners: Where are they today?

In 2005 the Friends of the Life Span Institute, a philanthropic group of LSI researchers, families and friends, launched a new endeavor to assist the research and professional development of outstanding graduate research assistants affiliated with an LSI project.

The Friends of LSI GRA Awards, established with the KU Endowment Association, were originally designed to recognize one GRA annually with a \$1,500 honorarium. It soon got better. Since 2006 the program has recognized two doctoral students each year, one at the dissertation stage and another in the early stages of graduate study.

In just five years the awards have helped to launch the careers of the following new scientists who have already made significant contributions to the growing body of knowledge in human and community development, disability and aging.

**2005**



**Tiffany Hogan\*** was the first recipient of the LSI Friends award while she was a National Institutes of Health (NIH) pre-doctoral fellow in speech-language hearing. She worked with Huge Catts, professor and chair, speech-

language-hearing; Mabel Rice, the Fred and Virginia Merrill Distinguished Professor of Advanced Studies; and Holly Storkel, associate professor, speech-language-hearing. Today Hogan is assistant professor of special education and communication disorders at the University of Nebraska-Lincoln. She is studying the genetic, neurological and behavioral links between oral and written language development in children with communication disorders. Her research has garnered outside funding from NIH, the Institute of Education Sciences and the American Speech-Language-Hearing Association, to name just a few.

**2006**



**Christa Anderson\*** completed her Ph.D. in psychology in May 2010 and worked primarily with John Colombo, LSI director and professor

of psychology, and Steve Warren, vice provost of research and graduate students and professor of applied behavioral science. She is currently a research associate in LSI's Early Cognition Laboratory. Her dissertation focused on pupil size and associated neural responses in children with autism. In her post-doctoral position Anderson will continue this line of inquiry in the hope of identifying biomarkers that can be used to diagnose autism and to determine if such biomarkers indicate prenatal neurological impairment.



Since receiving the LSI GRA Award, **Meredith Poore<sup>+</sup>** (first row, far right) has published numerous papers on adult speech acoustics, orofacial kinematics

(the science of motion), infant vocal development and infant sucking behaviors and presented her research at national meetings. A GRA in developmental speech physiology, Poore is working with Steven Barlow, professor of speech-language-hearing. Her dissertation research is a longitudinal investigation of orofacial kinematics in infants five to ten months of age, which she hopes will reveal information about what skills allow the onset of pre-speech vocal babbling in infants.

## 2007



**Sara Gould\*** was a GRA in the Juniper Gardens Children's Project. She completed her Ph.D. in clinical child psychology in summer 2010. While at LSI she worked with Yolanda Jackson, associate professor, applied behavioral science and clinical child psychology, and Dale Walker, associate research professor at Juniper Gardens, among others. Gould's dissertation research studied the associations between printed materials, parent-child interactions and child language development. She completed a pre-doctoral internship in clinical child psychology at Children's Mercy Hospital in Kansas City, Mo., where she is now a post-doctoral fellow, focusing on early childhood, feeding difficulties and eating disorders.



**Brandon Aylward<sup>†</sup>** was a doctoral student in clinical child psychology and worked with John Colombo, Ric Steele, associate professor, clinical child psychology, and Michael Roberts, director and professor, clinical child psychology. His

dissertation focused on the impact of risk on the developmental course of visual attention in premature infants. Aylward also completed a pre-doctoral residency at Cincinnati Children's Hospital Medical Center in Cincinnati, Ohio, where he is continuing his research through a post-doctoral fellowship in the Division of Behavioral Medicine and Clinical Psychology. He plans to specialize in three overlapping areas: nutrition science, pediatric pain (headache) and quality improvement methods and health services research.

## 2008



**Audra Sterling\*** completed her Ph.D. in cognitive psychology in 2009. She worked with several LSI scientists including Steve

Warren, John Colombo, Mabel Rice and Nancy Brady, LSI associate professor. She also managed the NIH-funded Fragile X lab. Sterling's dissertation focused on the language development of children with Fragile X. She is now a post-doctoral fellow working with noted Fragile X researcher Len Abbeduto at the Waisman Center at the University of Wisconsin-Madison. Sterling is investigating the language and cognitive development of females with Fragile X, the impact of autism on Fragile X and the best methods to identify autism in the Fragile X population.



**Daniel Schober<sup>†</sup>** is now a fourth-year doctoral student in applied behavioral science and preventative medicine and public health. He is a GRA for the Work Group for Community Health and Development and works with LSI scientists Stephen Fawcett, the Kansas Health Foundation Professor of Applied Behavioral Science, and Glen White, director of the Research and Training Center on Independent Living and professor of applied behavioral science. Schober is part of a community-based participatory research project funded by the Centers for Disease Control. His dissertation will examine the effects of community-level interventions to promote physical activity among Latinos in Kansas City, Kan.

## 2009



**Emily Zimmerman\*** is a fifth-year doctoral student in developmental speech physiology and neuroscience and a GRA in KU's Communication Neuroscience Laboratories. Her dissertation research, with Steven

Barlow as adviser, is looking at how vestibular stimulation that varies in frequency and acceleration can encourage respiratory and oromotor patterns in pre-term infants. She will collect data at Stormont-Vail Regional Hospital in Topeka, Kan. Zimmerman has also worked with LSI scientist Nancy Brady.



**Kimberly (Hiaoyi) Hu<sup>†</sup>** is a third-year special education doctoral student at the Beach Center on Disability working with Ann Turnbull and Rud Turnbull, Ross and Mariana Beach Distinguished Professors and Beach Center co-

directors. Since receiving the Friends GRA award last year, she has continued her doctoral studies in family support, family quality of life and inclusive education for children with developmental disabilities. This year she will collect data in five research sites in urban and rural areas of China in preparation for her dissertation on the family support needs of Chinese families with children who have intellectual disabilities.

\* Award for advanced student at the dissertation stage

<sup>†</sup> Award for student in first few years of doctoral studies



“It was the cat that was chased by the dog.”

A person with Broca’s Aphasia would stop on a sentence like that, baffled by whether the cat or the dog was in hot pursuit. Most adults can process a passive sentence with little effort, but people with Broca’s Aphasia, often the result of a brain injury or stroke, have trouble comprehending and producing complicated sentences.

According to new LSI investigator Jungwon Janet Choy, research in impairments like Broca’s Aphasia provides invaluable insights into how the human brain processes language. “Examining the language of populations with disorders offers us a unique opportunity to learn how language is affected when specific parts of the brain are injured,” she said.

## New Investigator Brings Unique Expertise to LSI: Introducing Jungwon Janet Choy

Aphasia is a language disorder as the result of damage to the brain. In the case of Broca’s Aphasia, such damage can result from a stroke or injury in the left inferior frontal region. People with Broca’s Aphasia have difficulty comprehending and producing words and sentences. Their sentence comprehension pattern is particularly striking in that simple sentences are unaffected but more complicated sentences such as passive sentences are affected. Choy plans to study the disorder at the word-level and sentence-level. “I look at how difficulty in processing words affects sentence comprehension in Broca’s Aphasia,” she said.

Through the use of an eye-tracking device—a fairly new method in language processing research—Choy will study how a person’s gaze moves between pictures of a cat or dog, for example, when hearing the words in a sentence like, “It was the cat who was chased by the dog.” Eye movement indicates what word the individual is processing, Choy said, and for a person with Broca’s, there is a delay in looking at the pictures corresponding to the words.

Choy came to the University of Kansas from Northwestern University in August 2010 for a joint appointment in LSI and in the Department of Speech-Language-Hearing. She holds a Ph.D. in communication sciences and disorders with a certificate in cognitive science, a master’s degree in linguistics from McGill University in Montreal and a bachelor’s in English from Seoul National University in South Korea.

According to LSI Director John Colombo, Choy’s research program in aphasia adds a unique area of emphasis to KU’s Lawrence campus. “Her interests in the analysis of grammar, eye-tracking and neuroimaging represent an intriguing mix of skills and interests that complement existing strengths at LSI and KU and create new possibilities for collaboration and discovery.”



Jungwon Janet Choy

# Funding

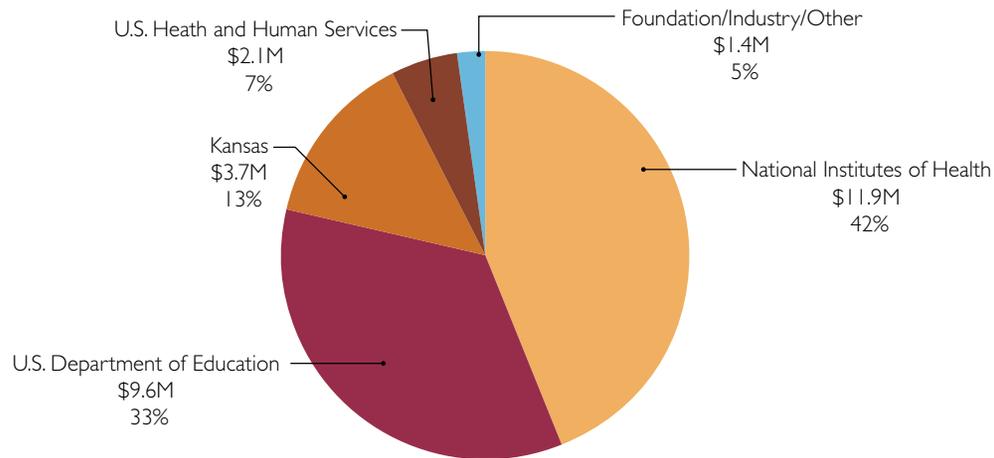
For the third consecutive year, the Life Span Institute (LSI) at the University of Kansas has exceeded its previous best totals for overall funding. Funding from grants and contracts increased by \$2.2 million, from \$26.5 million in 2009 to \$28.7 million in 2010, representing an increase of 8 percent over the prior year. This increase was due to the continuation of 73 previous awards and the arrival of 38 new awards. This achievement is remarkable in that it has taken place during a period of unprecedented competition for federal and state research funding for health and education.

Federal awards account for 82 percent of the Institute's overall external funding. Awards from the National Institutes of Health increased from \$11.2 million to \$11.9 million in the past year based on 40 awards (10 of which were new to KU). Awards from the U.S. Department of Education increased from \$9.0 million to \$9.6 million based on 23 total awards (9 new awards). Another \$2.1 million in funding was generated in awards from the U.S. Department of Health and Human Services.

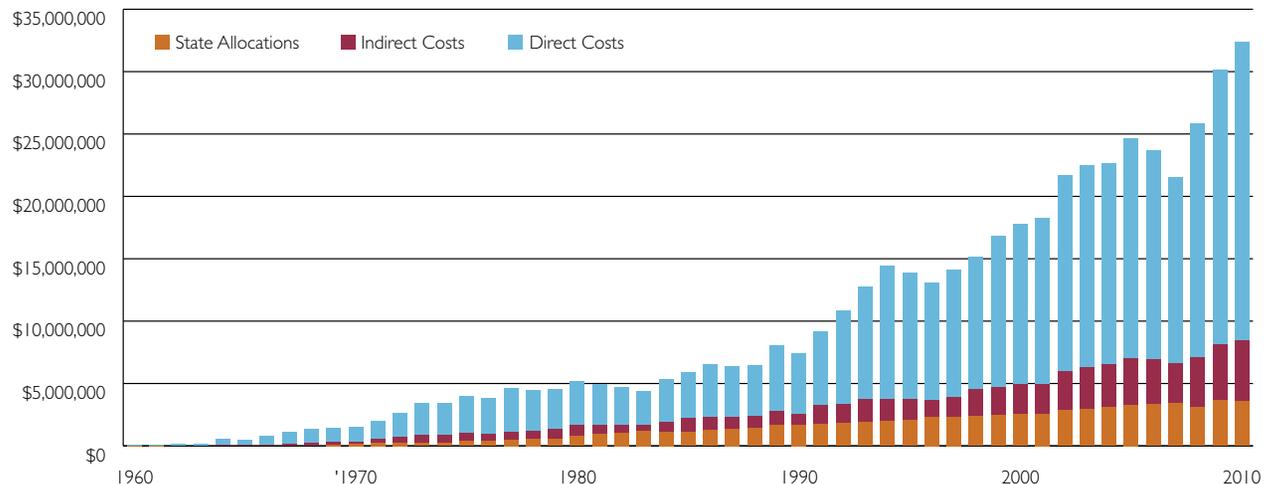
State of Kansas contracts totaled \$3.7 million this past year with 30 awards, 12 of which were new.

The LSI continues to leverage external funding at an impressive rate. In 1990, LSI returned \$3.30 on every dollar the state of Kansas invested in the Institute. In 2010, every state of Kansas dollar invested in LSI yielded \$7.91 in external awards.

## Life Span Institute Funding by Agency - FY 2010



## Life Span Institute Funding History: State Allocations and Grant Dollars by Fiscal Year



# Life Span Institute Affiliated Centers

## The Life Span Institute at Parsons 1956

For more than 50 years, the University of Kansas Life Span Institute at Parsons in southeast Kansas has partnered with national, state, regional and community partners to conduct research, develop model service programs and provide training for professionals involved in services to young children, youth and adults with disabilities and their families. Housed on the campus of the Parsons State Hospital, the Parsons LSI includes the Kansas University Center on Developmental Disabilities and the Parsons Research Center. Current research addresses early literacy and reading, language and communication, health and obesity and maladaptive and challenging behavior. Additionally, the Parsons LSI provides significant service and training across the nation and state of Kansas on the assistive technology needs of Kansans, early intervention and early childhood and training for community organizations and agencies serving persons with developmental disabilities.

David P. Lindeman, Ph.D., Director  
Contact: 620 421-6550, ext. 1713, parsons.lsi.ku.edu

### FY 2009-2010 Highlights

■ The Centers for Medicaid Supports and Services recognized the Assistive Technology for Kansans' Equipment Reutilization Program as a "Best Practice" program.

■ Parsons LSI researchers have developed a protocol with adaptive switches and sensory devices that has led to the emergence of speech in three previously nonverbal children and adolescents with blindness and other disabilities.

■ The Kansas Inservice Training system provided training and technical assistance for all early intervention and early childhood special education programs in all counties of the state with an impact on over 4,200 teachers, related service providers and administrators.

■ The Parsons LSI is the home of the only National Institutes of Health-funded research program on reading in individuals with intellectual disabilities.

■ Using the College of Direct Support to meet instructional requirements, three Kansans became the first direct support professionals in the United States to earn national certification from the National Alliance for Direct Support Professionals. The certification effort was supported by the Kansas University Center on Developmental Disabilities Kansans Mobilizing for Direct Support Workforce Change.

■ The Foster Care Project has been selected by the State of Kansas for replication. This program supports foster parents and biological parents of children with disruptive behaviors by providing an individualized, consumer driven, home-based service.

■ Assistive Technology for Kansans has a new accessible, inclusive community garden project that involves five communities across the state. Three hundred and seventy gardeners who have disabilities or health conditions are participating, including 150 Wounded Warriors.

■ The Parsons LSI is participating in the National Institutes of Health funded research program designed to understand and develop novel treatments for self-injurious and aggressive behavior in individuals with developmental disabilities by combining clinical and laboratory research.

## Juniper Gardens Children's Project 1964

The Juniper Gardens Children's Project began in 1964 when citizens from the northeast Kansas City, Kansas neighborhood joined with faculty from the University of Kansas to devise solutions to specific problems in educational achievement and parenting in that low-income community. The Project has grown over the years from a small, community-based research initiative housed in the basement of a liquor store to a unique internationally recognized research center that includes local and national community sites in projects and investigations. The Project is particularly recognized for its contributions to the development of effective approaches for accelerating learning and reducing classroom conduct problems in both special and general education. In 1996 JGCP was given the Research Award of the International Council for Exceptional Children in recognition of its outstanding research contributions. In 2010, the JGCP relocated to

the Children's Campus of Kansas City, a joint community initiative in Kansas City, Kan.

Charles R. Greenwood, Ph.D., Director  
Debra Kamps, Ph.D., Associate Director  
Contact: 913 321-3143, jgcp.ku.edu

### FY 2009-2010 Highlights

■ In May 2010 Juniper Gardens Children's Project (JGCP) relocated to the new, model Children's Campus of Kansas City/Educare at 444 Minnesota Avenue on the eastern edge of Kansas City, Kan., culminating an eight-year development effort by JGCP researchers and a host of partners including Project EAGLE Community Programs and the Family Conservancy, who, along with JGCP are the anchor tenants. (See story on page 5.)

■ JGCP expanded the opportunities for translating research to practice through national professional conferences for early childhood researchers, practitioners and policymakers. These opportunities were the Conference for Research Innovations in Early Intervention (CRIEI) and the first annual Preschool Response to Intervention (RTI) Summit.

■ Under the direction of Judy Carta, the JGCP has assumed responsibility for the CRIEI that was held February 25-27, 2010, in San Diego. CRIEI was founded in 1996 by a group including Carta and JGCP Director Charles Greenwood in response to the need voiced by early childhood researchers for greater opportunity to report, explore and improve approaches to the solution of the most difficult scientific problems and issues in their field.

■ As part of the Center for RTI in Early Childhood (CRTIEC) based at the JGCP, the first Preschool RTI Summit was held October 14-15, 2009, in Albuquerque, N.M. This meeting brought together researchers, practitioners and policymakers interested and involved in the RTI approach to preschool services. RTI is an approach that focuses on prevention by providing the level of intervention differentiation and intensity needed by young children to make measurable progress towards readiness for kindergarten.

■ Carta, J. J., Greenwood, C. R., Walker, D., & Buzhardt, J. (2010). *Using IGDIs: Monitoring progress and improving intervention results for infants and young children*. Baltimore, MD: Brookes. Publication of the book, Using IGDIs, describing the use of Individual

Growth and Development Indicators (IGDIs) for early screening and monitoring the progress of children 6 months to 5 years of age, was the culmination of more than 10 years of research and development.

■ Groundbreaking work at the JGCP, along with colleagues along the way, has demonstrated that measures for progress monitoring and intervention decision-making can be extended effectively to infants, toddlers and preschoolers. This demonstration has been in the context of programs like Early Head Start and Early Intervention (Part C-IDEA) (Greenwood, Carta, Baggett, et al., 2008; Greenwood, Walker, et al., 2006; Walker, et al., 2008). This work is important because the assessment of very young children is well known to be less sensitive and effective compared to that of older children.

■ This year Kathleen Baggett received new grant funding from both the U.S. Department of Education Institute of Education Sciences and National Institutes of Health. Baggett's research focuses on community translation, diffusion and uptake of evidence-based interventions for preventing child maltreatment, increasing nurturing caregiving and promoting social-emotional health and competencies of young children.

## Kansas Intellectual and Developmental Disabilities Research Center 1967

The Kansas Intellectual and Developmental Disabilities Research Center (KIDDRC) has been continuously funded by a core grant from the National Institute of Health and Human Development for the past 43 years. Throughout its history the KIDDRC has played a major international role in generating highly effective behavioral interventions aimed at the causes, prevention and treatment of intellectual disabilities and related secondary conditions and in delineating basic knowledge of the underlying biology of typical and atypical development. The center spans the KU-Lawrence and Kansas University Medical Center campuses as well as the Juniper Gardens Children's Project. Over the past four decades it has served as a model of interdisciplinary collaboration across campuses and disciplines.

John Colombo, Ph.D., Director  
Peter Smith, Ph.D., Co-Director  
Contact: 785 864-4295, kiddrc.kumc.edu

## FY 2009-2010 Highlights

■ Fragile X Research. KIDDRC investigators Nancy Brady, Audra Sterling and Steve Warren collaborate in a Fragile X consortium with the IDDRCs at the University of North Carolina and University of Wisconsin. This group recently showed the importance of early maternal responsivity to child communication outcomes for young children with FXS. This work was published in the *American Journal on Intellectual and Developmental Disability*.

■ Language Interventions. Marc Fey and Steve Warren have studied the intensity of communication intervention on language outcomes in children with disabilities. Their work formed the basis of a special issue of *Topics in Language Disorders* and was quoted in a recent NIH 5-year strategic plan.

■ Biobehavioral Markers for Developmental Disorders. John Colombo and Christa Anderson are searching for biomarkers of autism spectrum disorders (ASD) in infancy and early toddlerhood. Phasic and tonic pupil size appear to be systemic indicators of autism in toddlers and preschoolers. This work was published in the *Journal of Clinical and Experimental Neuropsychology and Developmental Psychobiology*. Steve Warren and Charlie Greenwood have also been integrally involved in the development of LENA, a new tool for the automated analysis of children's language. A recent paper published in the *Proceedings of the National Academy of Sciences* shows that LENA provides objective identification of children with autism and language delay.

■ Advances in Brain Injury. Collaborative investigative teams at KUMC are researching ways to repair brain damage. Nancy Berman, William Brooks and Steven Levine recently showed that damage to the cortex results in widespread degenerative events that occur well after the initial damage. Andrei Belousov and Eli Michaelis recently published a manuscript in the *Journal of Neuroscience* that shed new light on the role of glutamate in neuronal vulnerability after injury. Finally, Randy Nudo has explored the extent to which the motor or sensory cortex can reorganize after stroke and how this process can be facilitated by drugs or implantable devices.

## Kansas University Center on Developmental Disabilities 1973

More than 35 years ago, as the Life Span Institute's research on developmental disabilities took root, efforts began to translate this research into practice through what is now known as the Kansas University Center on Developmental Disabilities (KUCDD). Virtually all of the Life Span Institute's direct service, technical assistance, and post-doctoral, pre- and in-service training are associated with KUCDD. These include clinics to diagnose and treat children with disabilities, a statewide project that provides assistive technology to people with disabilities and their families and training childcare providers and social workers to support individuals with disabilities. In addition, investigators affiliated with the KUCDD conduct research that has state, national and international impact in areas like self-determination, positive behavior supports, inclusive educational practices, early childhood education, community and workplace supports, family systems and supports and other areas critical to the lives of people with developmental disabilities and their families.

Michael L. Wehmeyer, Ph.D., Executive Director  
Glen White, Ph.D., Associate Director  
Chet Johnson, M.D., Director, KUCDD-Kansas City  
David Lindeman, Ph.D., Director, KUCDD-Parsons  
Michael L. Wehmeyer, Ph.D., Director, KUCDD-Lawrence  
Wendy Parent, Ph.D., Assistant Director, KUCDD-Lawrence  
R. Matthew Reese, Ph.D., Assistant Director, KUCDD-Kansas City  
Contact: 785 864-4295, [kucdd.ku.edu](http://kucdd.ku.edu)

## FY 2009-2010 Highlights

■ Matt Reese has just completed a Department of Defense grant showing that young children with autism can be accurately diagnosed over Interactive Television (ITV) and parents were satisfied with those services.

■ Linda Heitzman-Powell is wrapping up a National Institute on Disability and Rehabilitation Research grant that also provides evidence that ITV can be effective in parent training of children with autism. Reese and Heitzman-Powell have joined forces in a Maternal and Child Health grant proposal aimed at examining the effectiveness of using ITV for both diagnosis and treatment of autism with families who live in rural areas and do not have local access to services.

■ The Assistive Technology for Kansans provided assistive technology devices and services to over 2,000 Kansans in all counties of the state.

■ The study of Communication of Persons with Intellectual Disabilities has a 50-year history of study examining various aspects of communication and language development. Current research involves 17 scientists from six universities who are collaboratively working in pursuit of effective strategies to support communication for persons across the lifespan.

■ More than 63,000 on-line lessons from the College of Direct Support have been completed by 4,626 learners representing 127 Kansas community service providers.

■ Parsons LSI researchers have innovated and tested a promising approach to weight loss for adults with intellectual and developmental disabilities.

■ The Kansas Inservice Training System provided intensive technical assistance to 26 programs impacting 569 teachers, 82 administrators and 6,736 children.

## The Research and Training Center on Independent Living 1980

The Research and Training Center on Independent Living (RTC/IL) has a 30-year history of conducting disability research, providing training and transferring knowledge to practice. The Center furthers Independent Living for people with disabilities through the use of scientifically sound, theoretically driven sustainable interventions and measures that lead to effective community living solutions and policy change. Center researchers work closely with consumers and service providers to develop research and products that meet their critical needs. The Center also partners with other universities and agencies to design and implement projects that improve the health and participation of people with disabilities in the community.

Glen W. White, Ph.D., Director  
Contact: 785 864-4095, [rtcil.org](http://rtcil.org)

## FY 2009-2010 Highlights

■ The Center will host a national state-of-the-science conference this fall to present findings from a five-year research project funded by the U.S. Department of Education. Community Participation by People with Disabilities: How Do We Measure Up? will be held Oct. 28-29 in Overland Park, Kan.

■ The Center's health promotion program, Living Well with a Disability, was featured in KU Works for Kansas, an annual publication produced by the University of Kansas that highlights the impact the university has on the lives of Kansans with disabilities. (For the online version, see <http://kuworks.ku.edu/page9.shtml> - Getting better at living well.)

■ Center researchers received two Department of Education grants worth more than \$1 million for projects that focus on self-advocacy and weight loss

■ Glen W. White, Jean Ann Summers and Cathy Rooney Howland received \$598,770 for three years to develop a training technology to help college students with disabilities have more successful academic outcomes. The training is based on the Americans with Disabilities Act (ADA) and related ADA accommodations.

■ Muriel Saunders, Amanda Reichard and Richard Saunders received \$599,467 for three years to implement and study a weight loss program for people with physical disabilities in Wichita.

■ The new website [www.disabilityprepared.ku.edu](http://www.disabilityprepared.ku.edu) is designed to lessen the impact of disasters on people with disabilities. The site highlights programs that represent best practices in addressing disaster-related needs of people with disabilities. It also features an interactive forum to solicit other successful practices from around the country.

■ Glen White was on sabbatical in the spring of 2010, traveling to Korea, Vietnam and Japan where he delivered several lectures on the importance of accountability for independent living centers that serve people with disabilities and how to use evidence-based research to achieve and report on this accountability.

■ Glen White is lead author of an article in the March 2010 issue of *Journal of Disability Policy Studies* titled "Moving from independence to interdependence: A conceptual model for better understanding community participation of centers for independent living consumers."

■ Amanda Reichard's article, "Health Disparities among adults with physical disabilities or cognitive limitations compared to individuals with no disabilities in the United States," was published by *Disability and Health Journal* in July 2010.

## Child Language Doctoral Program 1983

The Child Language Doctoral Program was established in 1983 as the first specialized degree program in the emerging field of child language acquisition. The program focuses on the interdisciplinary academic preparation and research training of child language specialists. The internationally recognized faculty brings diverse approaches to the study of how children communicate and speak. The program offers students a wide choice of research tools, facilities and field sites including the Child Language Acquisition Studies Lab that has the largest known archive of transcribed spontaneous samples from preschool children diagnosed as receptive/ expressive specific language impaired. The Life Span Institute, the Language Acquisition Preschool, and the clinical and research facilities of the Speech-Language-Hearing Clinic provide research sites and practica.

Mabel L. Rice, Ph.D., Director  
Contact: 785 864-4570, [clp.ku.edu](mailto:clp.ku.edu)

### FY 2009-2010 Highlights

■ Two students graduated with their Ph.D.s at the May commencement: Andrea Ash, currently an assistant professor in Communication Disorders at Oklahoma State University, and Jill Hoover, a post-doctoral trainee in the lab of Judith Gierut at the Department of Speech and Hearing Sciences, University of Indiana.

■ In May 2009, graduates of the CLP organized the first Graduate Research Retreat, held in Lawrence. In the one-day meeting there were presentations and discussions of the research programs of the following graduates: Pam Hadley, associate professor, speech and hearing science, University of Illinois; Janna Oetting, professor, communication sciences and disorders, Louisiana State University; Sean Redmond, associate professor, communication sciences and disorders, University of Utah, and Melanie Schuele, assistant professor, hearing and speech sciences, Vanderbilt University. Current doctoral students participated in the session.

■ Two students, Juliana Keller and Leah Kappa, received NIDCD pre-doctoral traineeships.

■ Two doctoral students are completing their written comprehensives: Alyson Abel and Megan Blossom.

■ Yi-Chih Chan is Coordinator for the Child Language Doctoral Proseminar.

■ Three students, Alyson Abel, Megan Blossom and Leah Kappa, presented poster sessions at the Graduate School in March.

■ Megan Blossom and Leah Kappa each presented a poster presentation at the Symposium for Child Language Research at the University of Wisconsin, Madison, Wis., June 2010.

## Beach Center on Disability 1988

Through excellence in research, training, technical assistance and public service in Kansas, the nation and the world, the Beach Center on Disability seeks to make a significant and sustainable difference in the quality of life of families and individuals affected by disability. Research focuses on access to the general curriculum, assistive technology, deaf-blindness, disability policy, employment, family supports and services in early childhood, family quality of life, individual control of funding, positive behavior support and self-determination. Founded in 1988 by KU Special Education Professors Ann and Rud Turnbull, the Beach Center honors Ross and Marianna Beach for their long-standing efforts on behalf of families affected by disability.

### FY 2009-2010 Highlights

■ Working with the Department of Defense (DOD) and Cornell University to analyze DOD and Army, Air Force, Navy and Marine policies about family support and to propose criteria for state-of-art family support programs for DOD and those branches.

■ The Schoolwide Applications Model (SAM), in place and being researched in 16 schools in Washington, D.C. and 10 schools in East Palo Alto, Calif., is now being extended into six schools in the Sacramento School District in California.

■ Model demonstration school sites for the third tier (tertiary level) of schoolwide positive behavior interventions and support have been put in place and are being researched in the Kansas City, Kan. (USD 500) and Topeka, Kan. (USD 501) School Districts.

■ Completion of a randomized trial study of the efficacy of interventions to promote self-determination and student involvement.

H. Rutherford Turnbull, III, LI.B./J.D., LI.M., Co-Director  
Ann P. Turnbull, Ed.D., Co-Director  
Michael L. Wehmeyer, Ph.D., Associate Director  
Wayne Sailor, Ph.D., Co-Associate Director  
Contact: 785 864-7600, [beachcenter.org](http://beachcenter.org)

## Gerontology Center 1990

The Gerontology Center's affiliation with the Bureau of Child Research in 1990 paved the way for an extended research agenda of the newly formed Life Span Institute. Center researchers are interested in all areas of aging, but are distinguished by seminal research in cognition, communication and aging, long-term health care and housing alternatives and decision making in later life. The Center coordinates an interdisciplinary graduate certificate program in gerontology for students enrolled in any master's or doctoral program at the University as well as a multidisciplinary graduate program that offers both masters and doctoral degrees in gerontology.

David J. Ekerdt, Ph.D., Director  
Contact: 785 864-4130, <http://www2.ku.edu/~kugeron/>

### FY 2009-2010 Highlights

■ David Ekerdt and Susan Kemper were selected as faculty for the inaugural Mini-College for alumni of the College of Liberal Arts and Sciences. Susan Kemper's lecture on brain aging, "Use It or Lose It," was the most highly subscribed session of the 2009 event.

■ The Gerontology Center organized an LSI/ Gerontology Community Conversation in Fall 2009, "Good Places for Later Life," that included faculty from across the university.

■ David Johnson was lead author of a paper in the October 2009 *Archives of Neurology* that pointed to declines in visuospatial skills (e.g., reading a map) as an early indicator of Alzheimer's disease. The report was picked up by the BBC, along with other U.S. media.

■ Susan Kemper was invited (one of 100 nationally) to Washington, D.C. by the American Psychological Association to become a congressional advocate for scientific research.

■ David Ekerdt was elected chair of the Behavioral and Social Sciences Section of the Gerontological Society of America, the nation's oldest and largest interdisciplinary organization devoted to research, education and practice in the field of aging.

## The Merrill Advanced Studies Center 1990

The Merrill Advanced Studies Center, established in 1990 with an endowment from Virginia Urban Merrill and Fred Merrill, is a catalyst for scholarship on disabilities and policies that shape university research. Merrill conferences and publications establish new directions and build collaborative projects in both

science and policy. World-class experts often meet as a group for the first time at Merrill conferences and go on to develop national projects that answer key questions in science. The Center publishes books on topics relevant to developmental disabilities and makes policy papers available online and in print. The Merrill web site at KU has fact sheets and discussions on science and policy for the general public.

Mabel L. Rice, Ph.D., Director  
Contact: 785 864-4570, [merrill.ku.edu](http://merrill.ku.edu)

### FY 2009-2010 Highlights

■ The 14th annual Research Retreat was held June 21-23, 2010, at the Oread Hotel in Lawrence on the theme "Sustaining and Enhancing the Research Mission of Public Universities." There were 30 participants at the invitation-only conference, including KU Chancellor Bernadette Gray-Little, Chancellor Emeritus James Moeser of the University of North Carolina, Chancellor Harvey Perlman of the University of Nebraska, KU Provost Jeffrey Vitter, KU Medical Center Executive Vice Chancellor Barbara Atkinson, Provost Brian Foster of the University of Missouri, Provost April Mason of Kansas State University and research officers and researchers from KU, Kansas State University, the University of Nebraska and University of Missouri.

■ A white paper from the 13th annual Research Retreat, on the topic of Regional Research Collaborations, was published and posted to the web site of the Merrill Advanced Studies Center, <http://merrill.ku.edu>.

■ Plans are underway for a scholarly conference to be held in Phoenix, Ariz., December 8-10, 2010, entitled, Epigenetics of the pathogenesis of language and speech impairments: Biological systems and behavioral development.

■ The Merrill website posted a new In The Know article, with the title, "Frequently Asked Questions about Dyslexia." Written by Hugh Catts, the article is part of its ongoing educational outreach effort.

## Work Group for Community Health and Development 1990

Established in 1975, the KU Work Group joined the Life Span Institute as a distinct center in 1990. The Work Group has developed widely used capabilities for community evaluation and community-based participatory research (including its Online Documentation and Support System) and building capacity for community health and development (including the Community Tool Box). Recognition

of these capabilities led to official designation in 2004 as a World Health Organization Collaborating Centre.

Stephen B. Fawcett, Ph.D., Director  
Contact: 785 864-0533, ctb.ku.edu

#### **FY 2009-2010 Highlights**

■ Latino Health for All Project: Implementation of coalition-determined strategies for promoting physical activity (i.e., soccer), healthy nutrition (i.e., community gardens), and access to health services (i.e., Celebrating Healthy Families).

■ Redesignation as a WHO (World Health Organization) Collaborating Centre.

■ Completion of the Spanish translation and light cultural adaptation of the Community Tool Box, <http://ctb.ku.edu/es>, a global resource for community health and development.

■ Receipt of a \$200,000 grant for the Arabic Translation and Cultural Adaptation of the Community Tool Box.

### **Center for Physical Activity and Weight Management 2001**

The Center for Physical Activity and Weight Management joined the Institute in 2001 and supports research, education, training and clinics for promotion of physical activity and nutrition to diminish obesity and related co-morbid diseases. The Center provides evidence-based programs for community-wide dissemination. The Center has a major effort aimed at preventing overweight and obesity in children by increasing physical activity and improved nutrition in elementary and middle schools. The Center's Energy Balance Laboratory features a whole-room indirect calorimeter that measures energy expenditure precisely under a variety of experimental conditions.

Joseph E. Donnelly, Ed.D., Director  
Contact: 785 864-0797, ebl.ku.edu

### **Biobehavioral Neurosciences in Communication Disorders Center 2002**

The Center for Biobehavioral Neurosciences in Communication Disorders (BNCD) was founded in 2002 when the National Institute on Deafness and Other Communication Disorders awarded a core grant to establish the center. The BNCD is a natural outgrowth of the Life Span Institute's long-standing focus on communication and language development and intervention. The BNCD's research spans a wide range of issues relevant to the causes and treatment

of communication disorders from infancy to old age including studies on infant attention, the genetics of language impairments, language intervention, the decline of working memory in old age as reflected in speech and more precise measures of hearing loss to aid cochlear implant design.

Mabel L. Rice, Ph.D., Director  
Contact: 785 864-4570, bncd.ku.edu

#### **FY 2009-2010 Highlights**

■ The BNCD currently has 12 affiliated investigators with 35 funded projects, with a total funding base of over \$7 million. The total number of NIH ROI awards in the funding base is 17.

■ BNCD held its semi-annual meetings with investigators and Core personnel in Fall 2009 and Spring 2010.

■ Personnel changes: Holly Storkel assumed the directorship of the PARC Core, with Sunyoung Ahn as the PARC Coordinator. Susan Kemper assumed directorship of the ATT Core, with Daniel Bontempo joining as ATT co-director and full-time statistician.

■ PARC services were expanded to provide Special Education Profiles for Kansas and Missouri school districts, to assist in recruitment of representative samples.

■ The DEEC Core provided training sessions for LabVIEW and Compact RIO, and direct support to 5 projects across 5 investigators, with 7 software releases.

■ Four outreach newsletters are published by the PARC core annually; PARC has recently started distributing a newsletter to investigators twice yearly, to update them on changes to HIPAA regulations and HSCL (Human Subjects Committee – Lawrence) activities.

### **The Kansas Center for Autism Research and Training 2008**

The Kansas Center for Autism Research and Training (K-CART), established in 2008 with private and public funds, is a multidisciplinary center that promotes research and training on the causes, nature and management of autism spectrum disorders (ASD). Committed to the highest standards of scientific rigor, K-CART generates new scientific discoveries about ASD, disseminates research-based practices by training professionals, practitioners and families who serve children and adults with autism and provides clinical services through the Center for Child Health

and Development at the University of Kansas Medical Center.

Debra Kamps, Ph.D. Director  
R. Matthew Reese, Ph.D., Co-Director  
Contact: 913 897-8471, kcart.ku.edu

#### **FY 2009-2010 Highlights**

■ K-CART, through joint funding of KU and KUMC, has funded 10 Discovery Grants since 2008 to advance the treatment and discovery of the causes of autism.

■ Matt Reese, director of the Center for Child Health and Development at KUMC and co-director of K-CART, has provided clinical services to 700 children with autism and 1,500 children overall. He has also directed 28 outreach trainings for 2,000 professionals and family members.

■ The Kansas Statewide Training for Autism Waiver Service Providers at K-CART, funded by the Kansas State Department of Social and Rehabilitation Services and directed by Linda Heitzman-Powell, provided 20 local and statewide training sessions for 183 persons to provide intensive early intervention services.

■ K-CART and Children's Mercy Hospitals co-hosted the Advancing Futures for Adults with Autism National Town Hall meeting, one of 16 national sites, in November 2009 to address housing, employment, and community life issues. Findings were submitted to policy makers in Washington D.C. in July 2010.

■ K-CART and the Life Span Institute in November 2009 hosted a statewide conference, Autism Across the Life Span, with 304 persons in attendance at 36 sessions. Satisfaction ratings overall were 3.5 on a scale of 4.

### **Centro Ann Sullivan del Perú**

Centro Ann Sullivan del Perú (CASP) is a nonprofit educational institution that serves children and adults with severe intellectual disabilities, autism and behavioral problems, their families and professionals from Peru and other parts of the world. Under the direction of its founder Liliانا Mayo, Ph.D., CASP is recognized and honored worldwide for its contributions as a model research, demonstration and training center. Mayo has been supported by a steady stream of her KU colleagues who have volunteered as consultants, trainers, administrators and fundraisers, notably, Judith Le Blanc, who serves as CASP research director, and retired Life Span Director Stephen Schroeder and Carolyn Schroeder. CASP has a formal

agreement with the Life Span Institute and receives much of its staff education through university faculty from the KU departments of Special Education and Applied Behavioral Science.

Liliana Mayo, Ph.D., Director  
Contact: [annsullivan.fundaciontelefonica.org.pe](mailto:annsullivan.fundaciontelefonica.org.pe)

■ CASP continues to educate more than 400 people with different abilities and their families. Teamwork between the staff and families continues to prepare students for inclusion and work in real jobs for real pay: more than 100 individuals currently hold positions in small and large companies and banks in Peru and 70 are included in regular schools.

■ The CASP online Long Distance Education Program via Elluminate Live with help from LSI and the University of Iowa produced 15 conferences between 2008-2010 for more than 12,000 parents and professionals in 22 departments of Peru and 10 countries, teaching them how to change expectations and attitudes, how to successfully teach people with different abilities and how to use positive approaches and respect for students in ways that everyone wants to be respected.

■ In February 2010 a National Institutes of Health Fogarty International Research Program grant was awarded to a proposal entitled Early Prevention of Aberrant Behaviors in Mental Retardation and Developmental Disabilities. Stephen R. Schroeder, former LSI director, is the principal investigator. Liliana Mayo, CASP director, and Judith LeBlanc, CASP research director, are co-principal investigators. This two-year grant will determine the most efficient and effective way to identify children between 0-3 years of age who are at risk for later self-injurious behavior. Programs will then be developed to reduce risk. KU academic contributors for the grant in 2010 are: Steve Schroeder, Janet Marquis, Matt Reese, Nancy Brady and Adam Kehler.

■ Liliana Mayo was awarded the 2010 Peruvian Human Rights Ombudsman Medal on April 27 along with former United Nations Secretary General Javier Pérez de Cuéllar. This award was in recognition for the work that Mayo and her staff are doing for individuals of different abilities in Peru.

■ In June 2010 Dr. Beatriz Merino, the Ombudsman of Peru and Ambassador Javier Pérez de Cuéllar, visited CASP. Steven Schroeder was present during their visit and presented the role of the Life Span Institute with CASP.



# Life Span Institute Affiliated Investigators

Mary I. Abbott, Ph.D.

David F. Albertini, Ph.D.

Ruth Ann Atchley, Ph.D.

Jane B. Atwater, Ph.D.

Kenneth L. Audus, Ph.D.

Edward T. Auer, Jr., Ph.D.

Kathleen M. Baggett, Ph.D.

Steven M. Barlow, Ph.D.

Andrei B. Belousov, Ph.D.

Nancy E. Berman, Ph.D.

Marianne Berry, Ph.D.

Kathryn Bigelow, Ph.D.

Nancy C. Brady, Ph.D.

Caitlin Brez, Ph.D.

William M. Brooks, Ph.D.

Juan L. Bruses, Ph.D.

Shilpa J. Buch, Ph.D.

Jeffrey M. Burns, M.D.

Merlin G. Butler, M.D., Ph.D.

Jay F. Buzhardt, Ph.D.

Susan E. Carlson, Ph.D.

Judith J. Carta, Ph.D.

Hugh W. Catts, Ph.D.

Paul D. Cheney, Ph.D.

Mark Chertoff, Ph.D.

Lane K. Christenson, Ph.D.

Vicki Collie-Akers, Ph.D.

John Colombo, Ph.D.

Nanveet K. Dhillon, Ph.D.

Rick T. Dobrowsky, Ph.D.

Joseph E. Donnelly, Ed.D.

Dianne Durham, Ph.D.

David J. Ekerdt, Ph.D.

Kathy A. Ellerbeck, M.D.

Morris D. Faiman, Ph.D.

Stephen B. Fawcett, Ph.D.

Aron W. Fenton, Ph.D.

Sarah Hargus Ferguson, Ph.D.

Barry W. Festoff, M.D.

Marc E. Fey, Ph.D.

Kandace K. Fleming, Ph.D.

Stephen C. Fowler, Ph.D.

Rachel L. Freeman, Ph.D.

Shawn B. Frost, Ph.D.

Cheryl A. Gibson, Ph.D.

J. Leon Greene, Ph.D.

Andrea F. Greenhoot, Ph.D.

Charles R. Greenwood, Ph.D.

Katherine Froehlich-Grobe, Ph.D.

Kathleen M. Gustafson, Ph.D.

Nancy A. Hamilton, Ph.D.

Betty M. Hart, Ph.D.\*\*

Linda S. Heitzman-Powell, Ph.D.

Leslie L. Heckert, Ph.D.

Jessica A. Hellings, M.D.

Martha J. Hodgesmith, J.D.

Eva Horn, Ph.D.

Mary L. Hummert, Ph.D.

Joan S. Hunt, Ph.D.

Thomas J. Imig, Ph.D.

Yolanda K. Jackson, Ph.D.

Chet D. Johnson, M.D.

David K. Johnson, Ph.D.

Michael A. Johnson, Ph.D.

Tiffany A. Johnson, Ph.D.

Debra M. Kamps, Ph.D.

Susan J. Kemper, Ph.D.

T. Rajendra Kumar, Ph.D.

G. Denise Lance, Ph.D.

Tracey A. LaPierre, Ph.D.

Judith M. LeBlanc, Ph.D.

Sang-Pil Lee, Ph.D.

Beth Levant, Ph.D.

Steven M. LeVine, Ph.D.

Maura W. Linas, Ph.D.

David P. Lindeman, Ph.D.

Todd D. Little, Ph.D.

Diane Frome Loeb, Ph.D.

Erik A. Lundquist, Ph.D.

Susan M. Lunte, Ph.D.

Gregory J. Madden, Ph.D.

Janet G. Marquis, Ph.D.

Kenneth E. McC Carson, Ph.D.

Amy McCart, Ph.D.

Elias K. Michaelis, Ph.D.

Mary Lou Michaelis, Ph.D.

Alexander R. Moise, Ph.D.

Jackob Moskovitz, D.Sc.

Nancy A. Muma, Ph.D.

Dorothy E. Nary, M.A.

Hiroshi Nishimune, Ph.D.

Warren B. Nothnick, Ph.D.

Randolph J. Nudo, Ph.D.

Kathleen Olson, Ph.D.

Susan Palmer, Ph.D.

Wendy S. Parent, Ph.D.

Michelle R. Patrick, Ph.D.

Brian K. Petroff, Ph.D.

Margaret G. Petroff, Ph.D.

Denise Poston, Ph.D.

Jerry A. Rea, Ph.D.

R. Matthew Reese, Ph.D.

Amanda Reichard, Ph.D.

Mabel L. Rice, Ph.D.

Katherine F. Roby, Ph.D.

Lisa Rusinko, Ph.D.

Sara H. Sack, Ph.D.

Wayne S. Sailor, Ph.D.

Kathryn J. Saunders, Ph.D.

Muriel D. Saunders, Ph.D.

Richard R. Saunders, Ph.D.

Cary R. Savage, Ph.D.

Richard L. Schiefelbusch, Ph.D.\*\*\*

Christian Schoeneich, Ph.D.

Stephen R. Schroeder, Ph.D.

Jerry A. Schultz, Ph.D.

Sheila J. Simmons, M.S.

Bryan K. Smith, Ph.D.

Peter G. Smith, Ph.D.

Michael J. Soares, Ph.D.

Joseph E. Spradlin, Ph.D.\*

Hinrich Staecker, Ph.D.

Martha D. Staker, R.N.

John A. Stanford, Ph.D.

Jeffrey L. Staudinger, Ph.D.

Ric G. Steele, Jr., Ph.D.

Holly L. Storkel, Ph.D.

Kathleen Stremel Thomas, Ph.D.

Debra K. Sullivan, Ph.D.

Jean Ann Summers, Ph.D.

Paul F. Terranova, Ph.D.

Barbara J. Terry, Ph.D.

Kathy S. Thiemann, Ph.D.

Jomella W. Thompson, Ph.D.

Lisa D. Timmons, Ph.D.

Ann P. Turnbull, Ed.D.

H. Rutherford Turnbull III, LL.M.

Gregory B. Vanden Heuvel, Ph.D.

Michael S. Vitevitch, Ph.D.

James L. Voogt, Ph.D.

Dale Walker, Ph.D.

Robert E. Ward, Ph.D.

Steven F. Warren, Ph.D.

Richard A. Washburn, Ph.D.

Jane R. Wegner, Ph.D.

Michael L. Wehmeyer, Ph.D.

Carl P. Weiner, M.D.

Michael J. Werle, Ph.D.

Glen W. White, Ph.D.

Dean C. Williams, Ph.D.

Howard Wills, Ph.D.

Douglas E. Wright, Ph.D.

Xuan Zhang, Ph.D.

Emeritus Distinguished Professor \*\*\*

Emeritus\*\*

Retired\*