

**Behavioral and Social Research Program  
National Institute on Aging  
National Institutes of Health**

# **Review of the Edward R. Roybal Centers Program**

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## **ACKNOWLEDGEMENTS**

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## **I. INTRODUCTION**

The Behavioral and Social Research Program (BSR) at the National Institute on Aging (NIA) conducted an evaluation of the Edward R. Roybal Centers Program for Translational Research on Aging in 2007 to assess the overall effectiveness of the centers and to determine what changes may be warranted for a future funding cycle, including potential adjustments to program scope, goals, and objectives. One year remains in the current 5-year funding cycle of the Roybal Centers, and a recompetition is expected pending NIA approval. Although each Roybal Center is administratively reviewed every year via progress reviews, an external evaluation of the general effectiveness of the centers was sought to determine further directions for the program as a whole.

The BSR obtained evaluation set-aside funding from the National Institutes of Health (NIH), which was used to retain Rose Li and Associates, Inc. (RL&A) to assist in this activity. Rose Li and Associates worked with NIA/BSR program staff to (1) establish a project plan and approach, (2) identify qualified candidates for and recruit expert panel members, and (3) establish the schedule for and organize the expert panel meetings, evaluation, report development, and review.

The evaluation consisted of three primary tasks:

- (1) Review of extant information about the centers program, including comparisons across the previous three published requests for applications (RFAs), summaries of centers' activities and accomplishments, and commentary provided by NIA/BSR program staff;
- (2) Guided interviews with the principal investigators (PIs) of the Roybal Centers, which were in some instances supplemented by written responses; and
- (3) Deliberations by an expert panel comprising five members, none of whom are at a currently funded Royal Center, to assist in evaluating the Roybal Centers. The expert panel was chaired by David Weir, with the following members: Scott Bass, Joseph Coughlin, Jack McArdle, and Vincent Mor. (Brief biosketches of panel members are included as Appendix 1.)

The expert panel met three times by teleconference, on June 12, August 3, and August 10, 2007. The purpose of the first teleconference was to (1) review the panel's charge and background materials that were circulated in advance of the call, (2) allow reviewers to ask questions of NIA/BSR program staff, and (3) solicit reviewers' input about the questions to be asked of center PIs in the guided interviews. The findings from the guided interviews and other requested information were given to the panel members in advance of the second teleconference. The panel's deliberations during the second teleconference generated the recommendations contained in this report. A preliminary draft of this report was circulated to the expert panel members in advance of the third teleconference, which was convened to resolve any lingering issues and to finalize the panel's recommendations.

The remainder of this report summarizes the findings from each of the three primary evaluation tasks and contains the conclusions and recommendations of the expert panel.

## II. BACKGROUND ON THE EDWARD R. ROYBAL CENTERS

Authorized by Congress in 1993 and named for former House Select Committee on Aging Chair Edward R. Roybal, the centers are designed to move promising social and behavioral basic research findings out of the laboratory and into programs, practices, and policies that will improve the lives of older people and the capacity of society to adapt to societal aging. The purpose of the Edward R. Roybal Centers for Research on Applied Gerontology is to conduct applied research to keep older persons independent, active, and productive in later life. The Roybal Centers were established in order to encourage the application of existing basic knowledge about cognitive and psychosocial aging to a wide range of important practical problems facing older persons. Although the Roybal Program was initially conceptualized as focusing on one segment of the BSR research portfolio (namely, psychology), the program was later expanded to include any discipline within the BSR in which the science was “ripe” for translation. This shift explains, in part, the increase in the total number of centers over time as well as the diverse research topics now covered by the program.

In 1993, the NIA awarded \$2.4 million to start six new P50 Centers for Research on Applied Gerontology. The Centers were established at Western Kentucky University; University of Miami; New England Research Institute, Inc. (NERI); Hebrew Rehabilitation Center for Aged; and Cornell University. The sixth center was a consortium of the University of Georgia, Georgia Institute of Technology, and Memphis State University in Tennessee. Several of the centers’ projects featured collaboration among scientists, major corporations, and organizations involved with older people. The centers operating during the 1993–1997 period had the following research interests:

- Preventing frailty by exercise and strength training.
- Redesigning nursing home rehabilitation programs.
- Designing learning programs for older persons in areas such as computer skills.
- Improving driving ability of older drivers.
- Encouraging productive activity after retirement.
- Providing peer support for Alzheimer’s caregivers.

A second round of funding (1998–2002) generated six Roybal Centers with the following research interests:

- Improved mobility of older adults.
- Determining how cognitive function affects medical decisions and medical device use.
- Social integration into home and community roles.
- Use of behavioral strategies to enhance late-life functional ability.
- Health maintenance and adherence to exercise regimens in diverse populations.
- Aging and performance of computer-based tasks.

Beginning with the 2002 RFA, the title of the Roybal Centers Program changed from “Centers for Research on Applied Gerontology” to “Centers for Translational Research in the Behavioral and Social Sciences,” and the mechanism of support changed from P50 specialized centers with component research projects to P30 center core grants, which support shared resources and

facilities for categorical research by a number of investigators. This second major shift in the Roybal Center program resulted partially from feedback from the original cohort of center directors who felt that the available funds of approximately \$500,000 per Center were nowhere near adequate to support a P50. This, coupled with the NIA desire to broaden the areas that could be considered for Roybal funding, motivated the move to the P30 mechanism, which provided less funding and was intended as infrastructural “startup” funding that in turn would lead to larger scale applications or interventions (either P01 program projects, R01s, or Small Business Innovation Research [SBIR] grants [R43s and R44s]).

The 2002 RFA also introduced the notion of “Pasteur’s Quadrant,” the use-inspired basic research exemplified by the work of Louis Pasteur. Under this paradigm, the most beneficial research is frequently motivated by considerations of use while simultaneously advancing basic understanding. This RFA language signaled the Roybal Center program’s inclusion of more basic research-oriented applications that are intended to lead to translational results.

In 2003, the program was renamed the Roybal Centers for Translational Research on Aging. An overarching thrust of the current slate of Roybal Centers therefore has been to disseminate and increase the use of research results, or translational research. Translation has become an important theme in the NIH community given the recent Congressional push for benefit to the public from the budgetary “doubling” era. In most Institutes and Centers, translation typically refers to moving research findings from bench to bedside; that is, into a new medical device or drug or changing provider practice. Such efforts are more easily measured, whereas claiming success in translating behavioral and social science research can be less clear. The NIA/BSR is interested in both translational research that improves health and the broader well-being of older people as well as research on translation itself.

There are currently a total of 10 Roybal Centers, six of which were funded beginning in 2004. The multiple domains of their research for the years 2003–2009 include the following:

- Translation of public health interventions to the public domain.
- Creation of university–private sector research structures to advance healthcare research.
- Maintenance of the mobility of older populations.
- Translation of cognitive theory into cognitive interventions.
- Development of better assessment tools for effective patient management.
- Translation of affective and cognitive theory into the medical decisionmaking domain.
- Forecasting of population health and economic decisionmaking.
- Translation of advances in measurement to global assessment of well-being.
- Development of living laboratories and university-industry partnerships to advance technology-based health monitoring in support of independent living.

Collaborative, interdisciplinary research between the Roybal Centers and other program initiatives is highly encouraged. For example, the Resource Centers for Minority Aging Research (RCMARs) partner with the Roybal and other NIA-supported centers to develop and implement strategies to improve recruitment and retention of minorities in clinical research.

Although the Roybal Centers program is considered the “flagship” in terms of NIA/BSR support for translational research, it is unlikely that there will be additional funds for the Roybal program in the near future. Thus, the Roybal Center program is complemented by a number of other NIA-supported efforts in translational research, including

- as a component of a specific aim(s) in a research grant;
- as a supplement(s) to an existing research, center, or program project grant;
- through cooperative agreements or interagency agreements with other parts of the Government; and
- via SBIR grants to develop marketable, research-based products.

NIA program staff expect that some fraction of the Roybal Centers will stimulate Research Program Projects (P01s); i.e., a broadly based, multidisciplinary, often long-term research program with a central research focus in contrast to the usually narrower scope of the traditional research project. Participating investigators may be from different disciplines, providing a multidisciplinary approach to a joint research effort, or from the same discipline and focusing on a common research problem or theme. Program projects are considered particularly appropriate vehicles for supporting translational research because of their interdisciplinary nature and the ability to constitute a suitable ad hoc review group that can appreciate better the nature and demands of this type of research.

## A. Structure

Each Roybal Center consists of a number of required components, with RFA requirements evolving over time as shown below in Table 1. A more detailed comparison of elements across the Roybal Center RFAs issued since 1997 is included as Appendix 2. It is clear from this comparison that component projects and the number of required components have been reduced with each successive RFA, which also is consistent with the shift from use of the P50 specialized center mechanism to the P30 center core grant mechanism. By providing more accessible resources, the P30 support is expected to assure greater productivity than that which could be achieved in separate projects and program projects. In the most recent RFA (2003), only the administrative core and pilot projects were required. Successive RFAs also have been less prescriptive in terms of requirements and procedures.

**Table 1. Cores or Components Required in Roybal Center RFA, 1997–2003**

Center Component	RFA Issuance Year		
	1997	2002	2003
Management and Administrative Core	Required	Required	Required
Pilot Core or Pilot Projects	Required	Required	Required
Dissemination Core	Required	Optional	
Component Projects	Required		
Subject Recruitment Core	Recommended		

The administrative core is designed to coordinate all center activities; monitor pilot projects that are part of the center, assessing their progress and reassigning resources as needed during the course of the award; initiate and maintain interactions with relevant community groups (e.g., community boards, businesses, healthcare facilities); administer faculty and student development

programs; and manage the advisory committee that provides advice to the PI on the overall direction and functioning of the center, including the individual pilot projects.

In general, pilot project topics may be broadly interpreted as long as they are compatible with the center theme. Approximately three to five pilot research projects are expected to be funded annually, usually for 1 year. While the NIA staff review proposed pilot projects, disapproval of projects is rare. Although the RFA does not dictate the investigator status for pilot projects supported through the Roybal Centers program, about half of the pilot projects have been awarded to junior investigators (i.e., assistant professors, postdoctoral fellows, predoctoral fellows) as a “stepping stone” toward applying for independent research funding, and about an equal number are awarded to researchers new to aging, translation, or both. Advisory boards with members from academia and community-based aging groups help ensure that the research is applicable to real-world problems.

## B. Active Roybal Centers in 2007

Quantitative and qualitative materials from the progress reports and initial grant applications, summarized into the tables and appendices appearing in this report, are intended to provide a collective sense of scope and coverage. The 10 active Roybal Center grants in fiscal year (FY) 2007 were funded at a total cost of \$3,429,812 and ranged from \$261,016 to \$395,018 (total costs). NIA funding for the ten active Roybal Centers since 1993 totals \$33,866,805.

**Table 2. Roybal Centers in 2007 by Funding Amount and Longevity**

PI	Institution	Title	First Funding	End of Project	FY07 TC
Ball, Karlene	U Alabama	Center for Translational Research on Aging and Mobility	1993*	8/31/08	\$395,018
Park, Denise	U Illinois Urbana-Champaign	Center for Healthy Minds	1993**	8/31/08	\$ 373,691
Pillemer, Karl A.	Cornell	Cornell Roybal Center for Translational Research	1993	8/31/08	\$ 393,917
Hughes, Susan	U Illinois Chicago	Midwest Roybal Center for Health Promotion	1998	8/31/08	\$371,900
Callahan, Christopher	Indiana U	Translation Research on Chronic Disease Self-Management	2004	7/31/09	\$285,231
Garber, Alan	Stanford U	Center on Advancing Decision Making in Aging	2004	7/31/09	\$360,000
Goldman, Dana	RAND	Roybal Center for Health Policy Simulation	2004	7/31/09	\$331,083
Kahneman, Daniel	Princeton	Center for Research on Experience and Well Being	2004	7/31/09	\$319,273
Kapteyn, Arie	RAND	RAND Roybal Center for Financial Decision Making	2004	8/31/09	\$261,016
Kaye, Jeffrey	Oregon Health Sciences U	Oregon Roybal Center for Translational Research on Aging	2004	7/31/09	\$337,488

\* relocated from Western Kentucky University

\*\* relocated from University of Michigan in 2002; previously at University of Georgia (1993–1995)

Six of the 10 Roybal Centers were funded beginning in 2004 with project end date in 2009. The remaining four Roybal Centers have been funded either since 1998 (one) or since 1993 (three), with the PI for two Centers changing institutions at least once (Table 2). These four “legacy” Centers were renewed in 2003 with project end dates in 2008, but the NIA will accept requests for bridge/closeout funding since the current plan is to recompete all the Centers simultaneously. There are currently three NIA/BSR program officers assigned to Roybal Center grants based on their area of expertise: Lisbeth Nielsen (cognitive psychology), John Phillips (economics), and Sidney Stahl (behavioral medicine).

### C. Previous Roybal Awardees

Of the PIs with Roybal Center grants in previous funding cycles, two were not renewed in 1998 and one was not renewed in 2003 (Table 3). These three former Roybal Centers were awarded \$7,704,766 collectively since 1993. Of note, Dr. Sara Czaja (Miami Center on Human Factors and Aging Research) successfully competed for a program project and obtained considerably more funding than would have been provided under the Roybal Centers program.

**Table 3. Previously Funded Roybal Centers by Funded Period**

PI	Institution	Title	Funded Period
Park, Denise	U Georgia	Center for Healthy Aging	1993–1995
Ball, Karlene	Western Kentucky University	Enhancing Mobility in the Elderly	1993–1997
Jette, Alan	NERI	Research Center on Applied Gerontology	1993–1997
Morris, John	Hebrew Rehabilitation Center for Aged in Boston	Center of Research on Applied Gerontology	1993–1997
Czaja, Sara J.	U Miami	Miami Center on Human Factors and Aging Research	1993–1999
Park, Denise	U Michigan	Center for Healthy Minds	1996–2002
Jette, Alan	Boston U*	Boston University Roybal Center Consortium	1998–2002

\*relocated from NERI

### D. Overview of Active Roybal Center Awardees

**University of Alabama at Birmingham, Karlene Ball, Ph.D.** – The theme of this Center is translational research on aging and mobility with a focus on impairments in physical, cognitive, and visual function. In addition to mobility restrictions, adverse outcomes such as falls, crash involvement while driving, and injuries are associated with underlying impairments. Continued mobility fosters independence, and decreased mobility leads to both social and economic dependence on family members and society at large. This Center’s research on older drivers has led to State motor vehicle departments implementing older driver-specific measurements.

**Indiana University, Christopher M. Callahan, M.D.** – Selected for its extensive expertise in geriatric medicine, the Indiana University Roybal Center is developing tools for patient management, with a focus on physician and patient interaction.

**University of Illinois at Chicago, Susan L. Hughes, D.S.W.** – This is a center for health promotion where social science research theories and methodologies are turned to practical use

to improve functioning and quality of life. Of particular interest is the ability to change behaviors beyond the level of the individual with interventions at the organizational and societal level. The RE-AIM framework is used as a conceptual guide to the accelerated dissemination and diffusion of public health interventions (Glasgow, Vogt, & Boles, 1999).

**Stanford University, Alan Garber, M.D., Ph.D.** – The Stanford Roybal Center is applying an emerging interest in better “emotional regulation” with increasing age to the choices people make when encountering medical- and health-related decisions.

**RAND Corporation, Dana Goldman, Ph.D.** – Dr. Goldman’s group is studying ways to forecast the effects of medical breakthroughs on behaviors and decisions related to public and private health expenditures. The Center is also investigating how surveys on these issues might be conducted by using the Internet.

**Princeton University, Daniel Kahneman, Ph.D.** – Princeton is examining well-being by developing methods developed by Nobel Laureate Kahneman to introduce important psychological and social components to measure well-being on a more effective basis than traditional approaches.

**RAND Corporation, Arie Kapteyn, Ph.D.** – This second RAND Center, established within a different research group than Dr. Goldman’s with funds largely from the NIH’s Office for Behavioral and Social Sciences Research, is developing Internet tools to examine the economic decisions older people make based on their ability to understand risks and probability of events.

**Oregon Health & Science University, Jeffrey Kaye, M.D.** – Using new technologies and input from academics, health providers, and community and industry leaders, this Center is developing a unique senior community from the ground up, one in which the activities within this community can be studied unobtrusively to examine the well-being of older people as they age.

**University of Illinois at Urbana-Champaign, Denise Park, Ph.D.** – The confluence of researchers makes this site uniquely well positioned to seek answers to the question of what conditions and interventions will maintain or increase cognitive health with age, including exercise, social engagement, cultural contexts, and environmental support.

**Cornell University, Karl A. Pillemer, Ph.D.** – The Cornell Roybal Center merged with two other prominent centers on aging within the Cornell system: The Center for Aging Research and Clinical Care at the Weill Cornell Medical College and the Institute for Geriatric Psychiatry in Cornell’s Psychiatric Division. The objectives of this collective, called the Center for Integrated Translational Research on Aging and Social Integration (CITRA), includes promoting and testing research-based interventions involving the impact of social integration on mental and physical health and bringing together researchers with practitioners in the field of aging in the design and implementation of interventions and applied research studies.

Appendix 3 presents a mapping of primary search terms identified by Roybal Center grantees for use in the Computer Retrieval of Information on Scientific Projects (CRISP) database system maintained by the NIH. Only primary CRISP terms are listed, although in some cases Centers

used these terms as secondary terms (denoted with a “2”). The search terms are broadly grouped into four areas: (1) General, (2) health and health conditions, (3) psychosocial aspects; and (4) methodology. The Roybal Centers funded since 2004 show continued emphasis on health and health services but a much greater emphasis on psychosocial aspects and methodology.

A press release issued by the Gerontological Society of America in March 2003, which helped to publicize the special issue “Challenges of Translational Research on Aging: The Experience of the Roybal Centers” is included as Appendix 4. The table of contents from this special issue is included as Appendix 5.

## **E. Pilot Studies**

The BSR emphasis on translational science is highly evident in the activities and pilot studies of the 10 funded Roybal Centers.

**Table 4. General Research Domains for 2003–2009**

<b>PI</b>	<b>Institution</b>	<b>Sample Pilot Domains</b>
Ball	U Alabama	Maintaining the mobility of older populations
Callahan	Indiana U	Development of better assessment tools for effective patient management
Garber	Stanford U	Translation of affective and cognitive theory into the medical decisionmaking domain
Goldman	RAND	Forecasting of population health
Hughes	UIC	Translation of public health interventions to the public domain
Kahneman	Princeton U	Translation of advances in measurement to global assessment of well-being
Kapteyn	RAND	Economic decisionmaking
Kaye	Oregon Health Sciences U	Development of living laboratories and university-industry partnerships to advance technology-based health monitoring in support of independent living
Park	UIUC	Translation of cognitive theory into cognitive interventions
Pillemer	Cornell U	Creation of university-private sector research structures to advance healthcare research

All Roybal Center grantees were required as part of their application to describe a plan to develop, identify, review, and monitor pilot projects (in a manner consistent with the overall goals of the Center). The Centers proposed a number of approaches, including the following:

- Recording the number of prepared manuscripts, published manuscripts, prepared grant applications, and funded grant applications as indicators of the extent to which each project contributes to the scientific literature.
- Preparing reports on a regular basis for review by the advisory committee.
- Requiring pilot investigators to present their plans and results to an internal work-in-progress seminar series or before an executive committee at intervals defined in advance.
- Recruiting and retaining research participants and outlining an adequate approach to data safety monitoring and ethics.
- Generating data useful for the design and funding of future research studies.

- Involving the PI, project director, program manager, and administrators in joint monitoring of pilot project progress.
- Assigning mentors and having pilot project investigators reporting regularly with brief updates on their work to the mentor.
- Asking the external advisory committee for review and input.

More than 100 pilot projects have been supported by the Roybal Centers since 2003. A listing of 53 pilot projects reported by Roybal Centers as active in the 2006–2007 reporting period is provided in Appendix 6 to give a snapshot of the breadth of topics under consideration. It may be premature to judge progress on many of the pilot projects given how little time has transpired.

The currently funded Roybal Centers together estimated over \$110 million generated from outside funding sources for projects claiming lineage to Roybal Center pilot project or infrastructure support. With total NIA funding for these ten centers on the order of about \$34 million over the past 15 years, it appears that the Roybal Centers program has leveraged more than three times the NIA investment since the inception of these Roybal Centers. Table 5 shows the breakdown in funded grants by Roybal Center cohort, source, and association with pilot projects. Two of the Roybal Centers that have been ongoing since 2004 have not yet submitted any follow-on grant applications. The figures in Table 5 therefore are based on reporting from 8 of the 10 Roybal Centers. The cumulative amounts reported in Table 5 should be considered an underestimate of grants awarded since at least two of the older centers and one of the newer centers stated that they were unable to track down all requested information, especially about grants resulting from older pilot projects, in time for this report. There may be instances where a seed grant was awarded to a student and the faculty mentor used the resulting data to develop a project; these are unlikely to have been reported. Also, no information was collected from terminated Roybal Centers about their subsequently funded grant applications that derived from their initial center work. Only a few of the currently funded centers reported grant applications submitted and not funded or under review, and the information provided about unfunded grant applications was generally incomplete.

**Table 5. Estimated Cumulative Total Value (\$m) of Grants Generated by Roybal Centers**

Roybal Cohort: Ongoing since	N	Est. TC Awarded (\$million)	NIA (e.g., R01, K's, SBIRs, supplements)	Other NIH (e.g., NCI, NINR, NIMH)	Other Federal (e.g., CDC, USDA, DOD)	Other (e.g., business, Foundations; state govt)
<b>Grants Spun off from Roybal Pilots</b>						
<b>1993 or 1998</b>	48	\$29.9	\$16.7	\$6.9	\$3.4	\$2.9
<b>2004</b>	11	\$7.6	\$5.5	\$0.4	\$0.2	\$1.5
<b>Subtotal</b>	59	\$37.5	\$22.2	\$7.3	\$3.6	\$4.4
<b>Grants Spun Off from Roybal Center Infrastructure Support</b>						
<b>1993 or 1998</b>	57	\$54.1	\$ 21.6	\$ 3.2	\$17.0	\$12.3
<b>2004</b>	4	\$22.8	\$13.8	\$ 0	\$ 0	\$9.0
<b>Subtotal</b>	61	\$76.9	35.4	\$3.2	\$17.0	\$21.3
<b>TOTAL</b>	<b>120</b>	<b>\$114.3</b>	<b>\$57.5</b>	<b>\$10.5</b>	<b>\$20.6</b>	<b>\$25.6</b>

As a group, the Roybal Centers reported a total of 120 funded grants that originated from or benefited by Roybal Center funds; 59 stemmed directly from Roybal Center pilot projects (valued at about \$37.5 million), and 61 benefited by Roybal Center infrastructure support more generally (valued at about \$76.9 million). Approximately half of the total external funding obtained has been awarded by the NIA. The older Roybal Centers have successfully obtained minority supplement funds from the NIA on three occasions and have tapped the NIA SBIR program for about \$3.65 million over the years.

Roybal Centers also have obtained support from the Agency for Healthcare Research Quality (AHRQ), Centers for Disease Control and Prevention (CDC), the U.S. Department of Defense Congressionally Directed Medical Research Programs Prostate Cancer Research Program, and the U.S. Department of Agriculture. Main sources of significant external funding include the Robert Wood Johnson Foundation, Intel Corporation, W.T. Grant Foundation, Gates Foundation, Hartford Foundation, Brookdale Foundation, New York State Health Foundation, and the Retirement Research Foundation.

### **III. FINDINGS FROM INTERVIEWS WITH ROYBAL CENTER DIRECTORS**

As part of the Edward R. Roybal Center review process, Rose Li and Associates conducted confidential interviews with the PIs of each of the 10 Roybal Centers. In four instances, a co-investigator or Center program manager joined the PI in the interview. The interviews were guided by 16 questions initially developed by Rose Li and Associates in conjunction with NIA/BSR program staff and then reviewed and enhanced by the expert panel convened for the review. The questions were divided into four categories: (1) Outcomes and accomplishments, (2) networks, (3) research translation, and (4) other program parameters. The full list of questions is included as Appendix 7.

Each interview was scheduled and conducted by Rose Li to ensure interviewer consistency. The interviews lasted between 30 minutes and 1 hour, 15 minutes and were completed between July 16 and July 24, a span of 7 business days. The Roybal Center PIs were given the option of responding in writing to the questions, and the questions were shared in advance with respondents so that they might be better prepared to provide meaningful answers. Abbreviated interviews were conducted with the three PIs who submitted written responses. All comments have been compiled in a nonidentifiable way when appropriate in order to address the purposes of this evaluation and to ensure confidentiality.

In terms of lessons learned, it was helpful when investigators reviewed the questions prior to the interview and/or drafted preliminary answers. This shortened the length of the interview by allowing Rose Li to focus on those answers that were unclear or required further explanation.

What follows is a summary of the main themes that emerged from the PI interviews.

## A. Outcomes and Accomplishments

### ***Outcomes Span the Spectrum of Idea Generation to Application***

When asked to list their top one or two Center accomplishments, PI responses ranged from ideas that are still in the development phase to tools or intervention programs that are being adopted at the community, State, or national and international level.

The accomplishments cited by PIs and described below can be grouped broadly into three categories: (1) Infrastructure building; (2) adoption of an intervention program, tool, or technology; and (3) shared resource development.

#### **Infrastructure Building**

At least four Centers identified one of their major accomplishments as building a research infrastructure at their institution that had not existed previously. Such research infrastructure is credited with enhancing the productivity of relevant basic research or existing projects, accelerating the development of new ideas or applications (including successful grant funding from other sponsors), recruiting new researchers to aging and/or translational research, and assembling multidisciplinary teams to solve practical problems. For example, at Indiana University, Roybal Center funding has led to the creation of an interdisciplinary laboratory to conduct research on and field test ideas for development in the arena of self-management. The Roybal Center at Stanford University has drawn psychologists into work on behavioral economics as it relates to aging, with practical applications expected in the next 3 to 4 years. At the Oregon Health & Science University, Roybal Center funding has made possible a whole new line of research in development of home technology for ensuring independent living. At the University of Illinois at Urbana-Champaign, the Roybal Center has been formally recognized by the institution as comprising a stellar body of research in a critically important area, resulting in the formation of a provost-level committee to develop a plan for aging, as well as providing a voice to researchers at the level of institutional policymaking.

All PIs reported recruitment of researchers new to aging, new to translational research, and/or junior investigators to Roybal Center activities. In the aggregate, more than 100 investigators who are now working within the Roybal Centers were reportedly not part of the original core team in this current funding cycle. This represents probably at least a doubling of researchers engaged in translational and aging research since the start of the funding cycle.

#### **Adoption of an Intervention Program, Tool, or Technology**

Five Centers reported their top accomplishment as a specific intervention program or analytical tool. The Center at University of Illinois at Chicago has developed two evidence-based interventions from its in-depth work on physical activity for older adults. One program, Fit and Strong!, is targeted to older adults with lower extremity osteoarthritis, and one is targeted to older adults with developmental/intellectual disabilities.<sup>1</sup> Both programs are being used in several States, and the Center has partnered with the National Arthritis Foundation (NAF) to

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<sup>1</sup> This program is focusing on persons with mental retardation, specifically for the most part older adults with Down Syndrome.

replicate Fit and Strong! nationwide through NAF chapters in the next 2 years. In addition, a Center co-investigator has developed instruments for self-efficacy appropriate for use with older adults with developmental/intellectual disabilities, and these are being used internationally.

The University of Alabama at Birmingham has been engaged for some time in developing tools and technologies for identifying older adults at risk for automobile crash involvement. In the most recent funding cycle, Center-developed tools are being tested statewide. Additionally, the Center partnered with State Farm Insurance in an SBIR grant proposal and is now working with other industry partners (i.e., the Allstate Foundation) to develop products based on Center-developed tools.

The RAND Roybal Center for Health Policy Simulation has developed the Future Elderly Model (FEM), a decisionmaking tool for policymakers that will potentially be used by a World Health Organization Commission on Social Determinants of Health. FEM also is driving the multimillion dollar RAND effort COMPARE, which is designed to objectively assess healthcare reform proposals.

Cornell's Center for Integrated Translational Research on Aging and Social Integration (CITRA) has used its Roybal funds to create a unique partnership model with community agencies for translational research and to engage researchers and practitioners in an adaptation of the traditional academic consensus workshop, dubbed "The CITRA Research-Practice Consensus Workshop Model." The partnership model, which CITRA has demonstrated through formal partnerships with community-based organizations, the major city agency overseeing services for older people, and major service providers, has accelerated CITRA's ability to put into practice pioneering translational research on social integration to improve the quality of life of older persons. This has involved a coordinated program of applied research and intervention studies on the related issues of social networks, social support, and social roles and their effects on health and well-being in later life. Over time, a specific emphasis emerged on major life course transitions and the risks to social integration associated with transitions and turning points in middle adulthood and later life.

The Oregon Center for Aging & Technology (ORCATECH) has developed a "Living Laboratory" model methodology for in-home assessment of activity to facilitate early detection of changes in health or memory. This model extends the traditional university-based "smart" home or apartment to a community of seniors' homes. The continuous data stream generated by this methodology provides a more complete view of real-world function as well as understanding of the variability of in-home activity. This Living Laboratory model has resulted in several companies' products being tested in the field; for example, sensors and identification systems (HomeFree, Ekahau) as well as software platforms (SpryLearning). The model has also spurred new grant-funded research including the following: (1) The NIA Biomedical Research Partnership Grant, where 150 elders are currently followed with this continuous assessment system (a total of 250 will be recruited by early 2008); (2) the technology driving the NIA-funded Home Based Assessment study of the national Alzheimer's Disease Cooperative Study and; (3) the innovative public-private partnership of the ORCATECH-Intel BAIC (Behavior Assessment and Intervention Commons) where ORCATECH has partnered with Intel Corporation's Health Innovation Group to develop functional assessment technologies, including

a medication tracker. The ORCATECH MedTracker will be piloted with 200 subjects through the NIA's Alzheimer's Disease Cooperative Study Group.

### **Shared Resource Development**

Two PIs pointed to the creation of a resource that will serve a common-good purpose as well as benefit an aging population. The RAND Roybal Center for Financial Decision Making supports maintenance and use of an Internet panel on decisionmaking, which has application to many of the goals relevant to the Roybal Centers program. Princeton's Center for Research on Experience and Well Being has made considerable progress toward adding an affective component to the American Time Use Survey so that experienced well-being is a regular descriptive feature of American life in a major, ongoing Government survey. This is intended to provide data for National Well-Being Accounts that would be useful to researchers, policymakers, and practitioners.

### **Differences by Roybal Cohort**

In general, longer established Centers (i.e., those ongoing since before 2004) reported more developed results, while newly funded Centers (i.e., those ongoing since 2004) reported that full translation and dissemination of their research are several years away. The longer running Roybal Centers generally noted that their top accomplishments have been disseminating their program or intervention to the real world through partnerships with community organizations or the public. Older centers, which all began as P50 specialized research centers, tend to have interventions and projects focused on some type of health practice, and information from these trials is disseminated to target populations. In terms of uptake, the Centers point to results from their trials not from actual public behavior since the latter is much harder to measure, especially without the funding to do so. It was noted by PIs that there is no NIA funding mechanism to take these interventions and programs into the mainstream.

For Centers funded since 2004, top accomplishments included developing and building relationships across new teams of scientists and new and innovative community partners in order to study interdisciplinary problems. In addition to the priorities and top accomplishments of creating infrastructure for conducting more interdisciplinary research, PIs noted that their Centers have been responsible for creating model frameworks and panels that can have many different applications in future research. Some PIs were primarily intent on affecting health policy and not health practice.

Responses by the younger Centers tend to focus more on creating the framework for future interdisciplinary/translation research, while older Centers have traditionally addressed specific research questions with testable interventions and programs. Newer Centers are not yet at the stage of translation/application, but they recognize that funding will be a future constraint to implementing any findings. The PIs understood that they would have to find other funds, probably from foundations, to truly make progress on the translation/dissemination aspect.

The overriding view from all PIs, not just of the older centers, is that there is insufficient funding in the Roybal Centers Program to make a huge difference in translation/dissemination, but they believe that the funds are precious in order to be able to take advantage of opportunities quickly

and strongly advocated for keeping the flexibility of the Roybal Centers that allowed them to get things done. In short, the funds are modest but provide incredible value added for the NIA.

### ***Indicators of Success Vary by Center Purpose***

For the majority of the PIs, traditional academic indicators of success (i.e., publication in research journals and generation of competitive grants) were considered necessary but insufficient measures of success for the Roybal Centers. Beyond this commonality, cited indicators of successful translation and dissemination varied with the length of the Center's existence and, more importantly, the nature of its work. Several PIs cited coverage in the popular press as an important indicator of success for their Center's work, with one describing media coverage as "the most useful way to change public perception." For Centers whose stated goal is to change public policy, receiving an invitation to present its research findings to Congressional staffers is an important indicator that the work has been successful. For Centers developing an intervention, program, or tool, the ability to interest and involve industry, foundations, community organizations, and Government partners in the adoption of their finding or product is important; these PIs noted that, in fact, finding sponsors with an interest in their work is critical to successful dissemination given the limited funds in the Roybal grant for that purpose. Demonstrating efficacy of a program, replicating it at another site, and "mainstreaming" are important indicators of success for Centers developing targeted interventions.

### ***Pilots Draw New Investigators, Generate Grants, and Train Junior Investigators***

The majority of PIs view the pilot projects as a good use of Roybal Center funds. They draw new investigators into the Center research area and can support high-risk, high-impact work that may later become a competitive R01. In some cases, PIs are using the pilot projects as a training mechanism by actively seeking out junior investigators, providing them feedback in a mini-review process, or pairing funded junior investigators with senior-level mentors.

### **Pilot Program Characteristics**

In the period from 2006–2007, the Roybal Centers reported 53 active pilot projects, with each Center supporting anywhere from 2 to 8 pilots at a time (see Appendix 6). In one case, the pilot award was rescinded due to lack of progress. Award amounts across the Centers ranged as well, from as little as \$3,000 (1 year) to \$80,000 (over 2 years), with the majority of awards ranging from \$25,000 to \$50,000. Some Centers set an amount (e.g., \$25,000 or \$50,000) or amount range (e.g., \$35,000 to \$50,000) for all awarded pilots, while others funded projects for varying amounts (in one instance, from \$10,000 up to \$80,000). Most Centers funded pilots for 1 year, although in some instances funded investigators took longer than 1 year to complete the project. In only a few cases were the same pilots renewed for a second or even third year, but subsequent year funding must compete with the current pool of applicants so is not necessarily assured.

Of the 53 pilot projects, 28 were awarded to junior investigators (graduate students, postdoctoral students/fellows, or assistant professors [or equivalent rank]). PIs reported that the pilots were instrumental in recruiting investigators new to aging research (at least 22), translational research (at least 26), or both (at least 22).

The pilot project competition programs within each Center range from formal processes initiated as institution-wide requests for proposals to word-of-mouth opportunities extended to investigators doing work related to the Center's focus. In terms of demand, some PIs reported that more funds would allow them to fund a few to many more high-quality grants, while others deemed the amount of funding available for pilots to be sufficient to cover the most competitive applications. One PI noted that the more important limiting factor is mentoring time by senior researchers, which would be needed to adequately oversee the progress of junior investigators.

### ***Center Value in Leveraging Capacity and Team Building***

At least five Center PIs stated that the Center funding facilitated a new kind of research at their institution that would not have occurred absent such funding. In addition, one PI lauded the educational experience that Center funds provide for young investigators through the competition of pilot project funds and subsequent mentoring by senior faculty. Also important to several PIs is the capacity of the Roybal Centers to create interdisciplinary teams of researchers in aging research as well as to lure investigators from disciplines not traditionally associated with aging research; i.e., bioengineering. Finally, several PIs spoke of the "leveraging" capacity of the Center platform, which supports work that grows into larger funded grants or draws in partners for translation and dissemination. In some cases, Center partners had not worked previously with an academic institution.

When asked to quantify the impact of their Center, PIs cited data from longitudinal followup studies, program effect sizes, accrued support from the NIH and other sources, and numbers of publications, particularly in high-impact or influential journals, and at least half mentioned press coverage. However, several PIs found it difficult to describe the quantifiable impact of their Center's activities. One long-term awardee cautioned that it is important to "take the long view" with regard to measuring the impact of a Center, noting that research done under a previous Roybal Center grant is just now beginning to attract public attention.

## **B. Networks**

### ***Greater Communication Needed Among Centers***

A majority of PIs feel that it would be helpful to have more communication among the Roybal Centers and that it would strengthen the program as a whole. However, most felt that the renewal of a formalized coordinating function for the Roybal Centers would not be necessary. Cited concerns were the introduction of a "layer of bureaucracy" and smaller amounts of funding for the Centers in order to support a coordinating function. There was, however, general interest in NIA/BSR staff facilitating interactions among Center investigators; for example, by coordinating a conference call with all Centers represented to exchange ideas. PIs in favor of this felt that such a meeting of investigators would be particularly helpful to discuss barriers and successes in dissemination of Roybal-funded work. Two PIs also suggested post-award collaborative grants to enhance interaction. It was noted that creating a mechanism for sharing information across the Centers and bringing the Centers together in a "user group" could create a public voice helpful in garnering media attention.

Some PIs expressed concern that interaction with other Center PIs may not be productive given the diversity in research themes across the Centers. However, this idea was countered by other

PIs who indicated that despite these superficial disparities, the Centers share the theme of research translation in common; thus, Roybal Center investigators could benefit from meeting together, particularly on the topic of dissemination. Even those PIs who did not see an explicit need for collaboration expressed willingness to participate in a meeting with other Roybal PIs.

### **C. Research Translation**

#### ***Obstacles to Research Translation Include Funding and Operational Guidance***

One PI indicated that the interview questions about translational/dissemination outcomes seem incongruent with the Roybal resources, which are too modest to support true dissemination. Inadequate funding was the most commonly cited obstacle to translation by Roybal Center PIs. It was noted that the current funding level only covers pilots and a minimal amount of administrative function so that there is no money remaining for dissemination. Some of the following were suggested as potential Center strategies to overcome this obstacle:

- Retaining a dissemination function within the Center even though a dissemination core is no longer an RFA requirement.
- Hiring a staff person to spearhead dissemination and establish relationships with the media.
- Combining Roybal funds with other funding resources to pay for dissemination activities.

Two other PIs believe that it is not only limited funding that hinders translation/dissemination but also a lack of clear operational guidance and support for PIs who are interested in taking the necessary steps to do so; for example, establishing a Web site, developing and designing training manuals, and publicizing the availability of the program. One PI described investigators' attempts to locate resources and guidance on translation/dissemination best practices as frustrating and inefficient. One suggestion was for the NIA/BSR to provide grant-writing assistance to Center investigators who partner with businesses to pursue SBIR funding, as this is an exercise that is foreign to most academic researchers. Other PIs suggested that the NIA set aside some funding in basic research grants for dissemination, host conferences on translational research, assist with publicity about successful programs or tools generated through the Roybal Centers, or partner with other Government agencies and foundations to support such efforts.

#### ***NIA/BSR Can Facilitate Translation***

PIs were unanimous that it is more sensible for Centers to work with local sponsors or relevant foundations for funding and dissemination rather than for the NIA to assist in this regard because many Centers already have developed relationships with local resources. However, a number of other suggestions emerged about how the NIA/BSR can help Centers with their translation efforts:

- Work collaboratively with other organizations (i.e., the CDC, Administration on Aging, relevant foundations) to create initiatives dedicated to disseminating evidence-based programs and set aside funds specifically for this activity.
- Provide assistance with publicity; i.e., refer media inquiries to the relevant Centers to increase visibility of the program.

- Hold conferences for Roybal Centers on research translation and dissemination.
- Populate study sections with members possessing expertise to bridge and understand this intersection of research; a “captive” study section was suggested.
- Encourage Centers to use dissemination funds in nontraditional ways; i.e., hiring a dedicated person to spearhead dissemination efforts.
- Continue funding in translational research as a priority.
- Emphasize new models to advance translational research; i.e., community-researcher partnerships.
- Require a commitment by applicant institutions to sustain the Center beyond the termination of Roybal funding as part of the application review criteria.

### ***Need for Clearer Message on Research Priorities***

A few PIs stated that there is a mixed message from the NIA about support for dissemination and felt that the NIA must decide if it wants to do this kind of work. If so, there should be recognition of the long ramp-up time and support for dissemination as a core function of the Roybal Centers. On the other hand, if the NIA views the Roybal Centers as a “launching pad” for subsequent funding and activities, the NIA should do more to make PIs aware of how they can utilize mechanisms, such as P01s, to do this. As of now, few Roybal Center investigators have submitted P01s. Although some have considered submitting, others were less informed about the P01 mechanisms as an option for continuing their work. In sum, the Roybal Center PIs as a group did not seem to have a clear and consistent understanding about NIA’s vision for the Roybal Centers.

### ***Awards Should Be Based on Merit and Clear Review Criteria***

Citing the complex and time-consuming nature of translational research, there was consensus among the PIs that term limits on Roybal Center grants are not useful. Some felt that 5 years is not long enough for significant outcomes to be realized. A more realistic timeframe given was 10 to 15 years from the birth of an idea to dissemination and use on a broad scale. The views were generally that applicants should be allowed to compete and the study section should decide which applications are the most meritorious. It was noted that existing Centers could propose new directions and may not necessarily continue along the same path. It is not possible to say a priori how much time it will take, so term limits were not considered sensible. Because of the modest level of funding, a few Centers expect greater returns from awarding pilots to junior or new investigators who work with a senior faculty mentor. These PIs recognize that they are making a long-term investment and that returns will not be immediate. A more precise estimate of timing was not given.

There was some variation in opinion on whether the NIA should emphasize innovation versus dissemination in the Roybal Center grants, but most agreed that the NIA should remain “agnostic” about supporting traditionally overlooked fields and should instead focus on the merit of the work proposed. The NIA was encouraged to determine exactly what it hopes to achieve with the Centers and set up clear criteria in the RFA accordingly.

### ***Pilots Valued for Flexibility and Efficiency***

Four PIs expressed a preference for a core component project over the P30 pilot mechanism, describing core projects as more effective in leading to more Center funds and R01s and more capable of dissemination beyond the institution. One PI stated that the component projects provide cohesiveness to the Center and “capture economies of scope.”

For five PIs, the pilot mechanism or flexible funding is preferred. In fact, one Center noted that removal of the required core from the recent RFA was a large part of the motivation for their application. This PI lauded the flexibility and agility of the pilots, which give Centers the ability to react quickly to emerging needs and pursue programs with a long-term payoff. At least two of these PIs noted the leveraging capacity of the pilots and, in fact, felt that a Center’s ability to do so should be a measure of its success. One PI stated that the pilots have a high impact with modest budgets and are enjoyable for the investigators and the PIs. As noted above, the flexibility of the Roybal Centers funds is valued tremendously, and several PIs felt that if the award goes to a strong investigator team, constraints on how funds are used are unnecessary to yield a desired outcome.

One PI stated that whether the Roybal Center is more effective as a P50 or P30 depends on what the NIA is trying to achieve with the Center grant. If the goal is to “cast its resources upon the waters” and generate a large amount of competitive R01s, then the P30 is the obvious choice. However, if the NIA wants to support development of workable interventions in the shortest amount of time possible, it is more sensible to fund core projects.

## **D. Other Program Parameters**

### ***Renewal, Funding Delays, and Communication Are Concerns***

Two PIs registered concern with the fact that the review was split into 2 years and uncertainty about how this will affect renewal. Centers whose funding ends in September 2008 are anticipating a break in funding, and were awaiting word about whether bridge funding would be made available. One PI reported on Center efforts to be conservative in spending in case there is a transitional period. Nevertheless, a break in funding was viewed as unproductive. Some PIs were also concerned that the previous RFA did not come out in a timely manner, further complicating concerns about breaks in funding. In terms of funding pilots, two PIs mentioned the delay in awarding pilots. Some also felt that the new requirement to have each pilot and budget approved is excessive, but this did not constitute a major concern. In fact, one PI found that the program staff raised good questions about the pilots and described the approval process as appropriate and well run.

In general, more timely communication between the NIA and Roybal PIs was requested. One PI specifically requested a discussion with the NIA about what it sees as the mission of the Roybal Centers, which seems less clear since the transition to the P30 mechanism. This PI noted the transition to P30s in other mechanisms as well (i.e., Pepper Centers, RCMARs) and expressed curiosity about the rationale for an emphasis on pilots throughout the NIA portfolio.

### ***RFA Generally Well Received***

While there were minor suggestions for future RFAs such as more lead time, a larger dollar amount, and an emphasis on high-impact areas, several PIs praised the flexibility and lack of required elements in the most recent RFA. A broadly thematic RFA was cited as enhancing innovation and particularly important given the small dollar amount of the award. One PI suggested that integration with other Centers should not be a review criterion, pointing to the work that has been done to date absent formal integration. Two PIs had opposing views on whether the RFA should focus on implementation of translational research; the PI in favor of more emphasis on translation suggested more generous funding to allow for full-time translation and dissemination “specialists” in the centers and funding to evaluate Center activities. Finally, there was a call for shorter turnaround time between submission, award decision, and funding.

### ***Establishing Appropriate Review Panel Is a Concern***

At least three PIs mentioned concerns with the review process that relate to assembling an appropriate panel to review translational research grant proposals. It was noted that some academics have a bias against translation and will only look favorably upon applications from a basic science perspective when what is needed is greater balance in the panels. This sentiment was seconded by two other PIs, who called for reviewers who have the necessary expertise but do not think narrowly about the research enterprise. One PI suggested that, if possible within the boundaries of NIH policy, qualified reviewers should be allowed to review an application even if it originates from their institution. Alternately, it was suggested that reviews be divided into review domains so that the best qualified people could provide their input. In any case, the advice was for the NIA to comprise the best possible committee and, if necessary, exclude the potentially in-conflict reviewers from a final vote on specific applications while still soliciting their feedback on the other applications.

### ***Centers Best Positioned To Leverage External Funding Opportunities***

PIs cited existing or potential funding from the following organizations: AHRQ, the VA’s Health Services Research and Development Centers of Excellence, the Hartford Foundation, the Brookdale Foundation, and the Robert Wood Johnson Foundation. In addition, PIs reported working with other NIH-funded projects within their Centers as well as competing for SBIR grants. There was unanimous agreement that Centers are better positioned, both geographically and in other ways, to find partners, and it would not be helpful to centralize the effort at the NIA. The rationale provided for this was threefold: (1) Each Center is topic specific across a broad spectrum, so finding a single foundation source to partner in funding the entire program may be difficult; (2) many Centers already have some local connections to foundation or industry partners; (3) there are complexities surrounding funding opportunities unique to each institution.

One PI suggested that it may be helpful for PIs to broker some relationships between NIA personnel and top university administrators to encourage institutional fundraising for aging research, particularly as some private donors who would not otherwise support research efforts would support aging research. This suggestion was born of a concern that institutions do not have to commit to sustain the Roybal Center beyond the end of funding despite the NIA’s investment. In this PI’s opinion, it is reasonable to expect institutional “buy-in” after a certain point in time.

### ***More Funds Needed To Accomplish Center Objectives***

While there was recognition of the constrained budgetary climate at the NIH, almost all of the PIs responded that the current level of support is not adequate to carry out the Center objectives. There was consensus that the current funds are just enough to cover the seed projects (with administration described as a “bare bones” operation), but expansion to support more dissemination activity or even to sustain a component core would leave the Centers “grossly underfunded.” One PI expressed fear of losing hard-won industry partners because of the flux in funds. Another PI stated that the local Center cannot support medical school-based faculty because of limited funds for salaries. In fact, most PIs rely on other sources of funding to pay for staff salaries. In general, PIs that viewed the Roybal Center funds as a supplement to existing funds expressed less concern about the budget constraints.

When queried about what they could do if funds were dramatically increased, several PIs suggested more dissemination activities or internal development. One PI imagined hiring a researcher in a particular domain to develop an area of interest (with a 5-year commitment for the person’s salary), collecting blood from participants and genotyping the samples, and aligning all Center research activities by using the same batteries.

### ***Administrative Supplements Potentially Valuable***

Only one or two PIs reported receiving an administrative supplement to Roybal funds, and these individuals felt that they are valuable, when available, to either fund pilot projects at a slightly higher level, involve a junior investigator, or potentially to encourage Roybal Centers to work together. However, no one expressed an interest in the NIA lowering the amount of Roybal Center awards in order to field a competitive supplement later in the award period. The PIs who had not used the supplements felt that they were either unavailable, given the budgetary climate, or had no opinion. One PI indicated that supplements are useful but do not replace the need for higher levels of funding.

### ***Appropriate Balance of Centers Difficult To Determine***

Nearly all the PIs found the question about the appropriate number of Centers difficult to answer. One PI felt that rather than trying to determine the optimal number of Centers, the NIA should determine the value of the Centers, evaluating each one on its own basis. Three PIs responded in favor of fewer centers with more funding to do decent dissemination. Others based their response on whether funding is fixed, emphasizing that if the current number of Centers is retained, funding should be as flexible as possible so that Center Directors can leverage it as best they can. Most agreed that reducing the funds for each Center would not be beneficial, as Centers are already operating “leanly” and rely on other resources to achieve their goals. However, one PI felt that because the NIA receives a high return on investment in the Roybal Centers, it should fund as many good applications as it receives where it has a reasonable expectation of a good outcome. In the words of this PI, “People can be very inventive when they have less money, and they can be very expansive when they have more.” In conclusion, several PIs stated that they would rather have some Center funds than none at all.

### ***Other Comments***

When asked if there were other questions that the PIs thought they should have been asked, one PI expressed surprise that they were not asked about how the PIs believe they are being judged by the NIA. He had assumed that it was by rate of conversion of pilots to R01s, but the interview questions suggest criteria that are less proximate. One PI thought that a question implicit in the interview is how much the enterprise advances the NIH research agenda. This PI affirmed the importance of including research that leads to practical application in the NIH portfolio. Another PI emphasized, however, that the Roybal Centers should not be thought of simply as producing developed applications for the public. In some cases, Centers have chosen long-term strategies to encourage researchers to work on aging and translational topics, and this training and recruitment component should not be lost in the evaluation of the program.

PIs offered these closing thoughts:

- The Roybal Centers are a great program, and it is hoped that the evaluation convinces reviewers to keep funding it.
- The Roybal Center program is enjoyable, particularly for what it is doing for the intellectual life of the institution.
- The NIA is asking valuable questions about how its money is being spent, and it is likely these questions will lead to an equally good or better investment than NIA already has.

## **IV. CONCLUSIONS AND RECOMMENDATIONS**

The expert panel met on August 3, 2007 to review the summary information from program files and the PI interviews, to address questions to NIA/BSR staff, to discuss their assessment of the overall effectiveness of the Roybal Centers program, and to chart future directions for the program, including potential changes to scope, goals, and objectives. See Appendix 8 for the evaluation questions that panel members used to guide their discussion. Throughout the discussion, the panel took it as their mission to evaluate the program as a whole and not to rank or evaluate the individual Centers. The panel's conclusions and recommendations follow.

### **Significant Accomplishments Attributed to Roybal Centers**

The Centers as a whole meet the stated objectives of the RFA. Their impact on specific research fields has been notable. The work on older drivers at UAB, one of the longest running centers, has had a significant impact in the field of community health. In cognitive aging, the Centers are notable for nurturing a research process that is headed in the right direction. The work related to economics and demography of aging at the more recently funded centers appears promising. Modeling of health and long-term care costs is likely to be influential in future healthcare reform discussions.

### **Clearer Articulation of Program Focus and Intent Recommended for Future RFAs**

The panel noted that each Center seems to have a clear vision for its own work but that the foci of the Centers taken together are diffuse. The panel endorses the NIA's desire for the program to

support a diversity of approaches; however, panel members called for a clearer statement in the next RFA of the range of diversity desired, specifically in the area of translational research and relative emphasis on pilot projects. The objectives of the program should be more clearly stated so that outcomes can be more readily measured.

Emphasis on innovation should continue to be a component of the RFA, but a new RFA does not necessarily need to place greater emphasis on innovation than previous years as the current Centers show a fair amount of innovation as a whole. The panel did not see a need for the RFA to encourage applications in fields not traditionally supported given the already diverse nature of the Centers.

***Clarify Meaning of “Translation Research”***

Previous RFAs appear to have used the terms "translation" and "translational research" interchangeably even though they are not synonymous. Future RFAs would benefit by having a clear statement on the range of activities that the NIA would like to see supported by the Roybal Centers. There are at least three interpretations of "translation research": (1) research on how to accelerate translation of basic research findings into practice; (2) the act of translating a basic research finding into a program or tool to be used at the population level, and/or (3) the dissemination of research findings in ways accessible to a general audience. Translation has a special place in behavioral and social research because adoption of new behaviors and practices by the at-large population occurs in a social context. Behavioral and social researchers are at an advantage in this regard because they seek to understand how and under what circumstances uptake will occur or, conversely, why people are not doing the things that science shows to be good for them.

***Clarify Desired Impact and Recommended Measurement Approach***

The diversity of approaches taken by the different Centers, and their different starting dates, make assessment somewhat more difficult. Although subsequent award of a large SBIR, R01, P01, or U01 (cooperative agreement) grant can indicate meaningful progress in changing behavior, programs, or policies, the numbers of grants funded on the basis of pilot projects are not necessarily the most appropriate indicator of value added for the Roybal Centers. If value added is defined as "quantifiable impact on quality of life" as it was presented to the Center Directors in the interview questions (see Appendix 7), then the program should not be judged primarily on the number of competitive research grants generated but rather on the success of its intervention activities. The mission of the Roybals has changed and expanded over time, so there is necessarily a difference between the thrust of the older cohort of Centers (those that have been ongoing since 1993 or 1998, for which larger intervention programs were more important) and the recent cohort ongoing since 2004, for which the funding constraints limited the centers to smaller pilot research grants. The panel concluded that evaluation of the Roybal Centers necessitates a flexible view of what it means to have value. Future RFAs should include a clear statement of the different forms of value that can be considered by Center directors to meet NIA's expectations.

Information about grants that derive from Roybal Centers support, including pilot studies, has not been collected systematically in the past. It would benefit future progress reporting if Roybal Centers were asked to report the title of funded grants and contracts that are the legacies of

Roybal pilot projects, the funding source (i.e., NIA, Other NIH, Other Federal, and Other), and award amount. Ideally, information about unsuccessful applications should also be recorded, which can help provide a fuller picture of the activity stimulated by the Roybal Centers.

Judgments about whether a particular Center is accomplishing its goals should be determined by the NIH peer review panel based on the justification provided in the competitive renewal application. Review criteria should factor in reasonable prospect of success within the limited funds provided by the Roybal program with a view to the necessary timeframe in which the goal can be accomplished. In concrete terms, the panel deemed it reasonable to fund a Center or PI on the same topic for another 5 years if it was 10 years into working on a 15-year problem as long as the application could demonstrate measurable progress and benefit from additional funding that would justify the cost.

#### ***Clarify Expectations Related to Recruitment of New Investigators***

It would be helpful to clarify the definition of “junior investigator” to whom pilot funds may be awarded. Although pilot funds should not be used in lieu of training grants for graduate students, support of graduate students engaged in research is an appropriate use of the funds assuming that they are being used for a strategic purpose within the Roybal Center’s specific aims. The panel recommended inclusion of the term “underrepresented investigators” in subsequent RFAs to encourage recruitment of minority investigators as pilot project awardees.

#### **Improve NIA/BSR Program Coordination and Communication**

Calls from Center PIs for NIA/BSR to help improve coordination and communication among the Centers were echoed by the panel. Possible activities might include the following, to be supported by the NIA/BSR on behalf of the Centers:

- Host annual meetings of Center directors where Roybal Center Directors share program implementation information in a more prospective rather than retrospective manner and where cooperative competition is encouraged;
- Issue summary reports of Center accomplishments and prospective program implementation information;
- Create a program Web site and/or listserv;
- Support investigators in research diffusion, dissemination, and public relation efforts. and encourage Centers to use dissemination funds in nontraditional ways,
- Encourage collaboration with other NIA-funded Centers (Demography Centers, RCMARS),
- Issue post-award collaborative grants to enhance interactions among the Centers,
- Assist Centers in identifying sources of funding and understanding grant requirements of other programs, including SBIRs.

Centers are already showing creativity in finding internal and external opportunities for leveraging Center funds. They are working collaboratively with other organizations (public and private) to create initiatives dedicated to disseminating evidence-based programs. It would be helpful for Centers to share their experiences in doing this with other Centers as a means to encourage greater opportunities. Such an activity could be included in the annual meetings of Center directors. The panel clarified that these activities do not need to take place under the

auspices of a coordinating center and should be coordinated by program staff. A small contract could be issued for this purpose.

### **More Funding Would Be Beneficial**

The approximately \$360,000 total cost per Center was deemed a very minimal amount to achieve the goals of the program. Expecting the Centers to achieve wide-scale, population-measurable change and adoption of innovations with this budget level is not feasible. Given the typical funding levels of the Roybal Centers, NIA should consider putting greater emphasis in future RFAs on understanding the mechanism of translation as well as barriers to successful translation. Partnership with ongoing translation projects, efforts to secure private funding from foundations, and applications for regular research (R01), program project (P01), and SBIR grants should continue to be encouraged as avenues for funding full-scale implementation of programs and/or interventions developed from Roybal Center activities.

Absent the possibility for more Roybal centers funds, the panel acknowledged that in order to have greater intensity within each of the funded topic areas, there would either likely be fewer Centers and fewer broad themes OR the PIs would have to apply for other types of funds using other mechanisms. Encouraging cross-institutional collaboration was offered as one means to encourage wider range of participation on a subject area in order to avoid losing the breadth of topic areas. In conclusion, the panel stated that the level of support is at the very bottom end of what is adequate and recommended greater funding for the program as a whole. The panel did not recommend reducing the number of centers as a way to increase funding per center. The number of centers should be determined by BSR goals and priorities coupled with the NIH peer review process and judged based on the merit of the applications.

### **Continuation of Roybal Centers Program Enthusiastically Recommended**

The Roybal Centers program has proven to be a valuable means of meeting NIA/BSR's goal to improve the lives of older people and the capacity of society to adapt to societal aging. The Roybal Center funding is seen as an important complementary rather than the primary source by which researchers active in translation and implementation accomplish their goals. The program is valuable for its flexibility and adaptability to quickly address emerging needs related to research that will benefit the aging population. The Roybal Centers program is making efficient use of the current resources and has demonstrated a remarkable ability to leverage existing resources by obtaining over \$100 million in external funding. The current P30 model has given NIA enormous value for its investment. Panel members enthusiastically support the continuation of the program as a critical component of the NIA/BSR interventions research portfolio.

## APPENDIX 1

### Members of the Panel to Evaluate the NIA Roybal Centers

**David Weir, Ph.D.** (Chair) is Research Professor and Associate Director of the Survey Research Center, Institute for Social Research at the University of Michigan, and Co-Director of the Health and Retirement Study (HRS), funded by the NIA. Dr. Weir's current research interests include the measurement of health-related quality of life; the use of cost-effectiveness measures in health policy and medical decision-making; the role of supplemental health insurance in the Medicare population; the effects of health, gender, and marital status on economic well-being in retirement; and the effects of early-life experience on longevity and health at older ages.

**Scott Bass, Ph.D.** is Dean of the Graduate School and Vice Provost for Research and Planning at the University of Maryland, Baltimore County (UMBC), where he holds academic appointments of distinguished professor of sociology and public policy. His responsibilities involve the development and expansion of research and graduate education at this selective, midsized, public research university. Dr. Bass was formerly a professor at the University of Massachusetts, Boston, as well as Director of the University's Gerontology Institute.

**Joseph F. Coughlin, Ph.D.** is Founding Director of the Massachusetts Institute of Technology (MIT) AgeLab – a partnership among MIT, industry, and the aging community to engineer innovative approaches and technologies to improve the quality of life of older adults and those who care for them. Dr. Coughlin's own research seeks to develop new business models that respond to the demands of today's and tomorrow's older adults by seamlessly integrating technology and consumer services.

**Jack McArdle, Ph.D.** is Professor of Psychology and Gerontology at the University of Southern California. He is a quantitative psychologist who studies longitudinal dynamics in panel data. The context for his research is the area of cognition. He has recently worked with HRS in an effort to bring more psychometric concepts and robust measurement of cognition into survey research.

**Vincent Mor, Ph.D.** is Chair of the Department of Community Health at the Brown University School of Medicine and formerly served as the Director of the Brown University Center for Gerontology and Health Care Research for 10 years. Dr. Mor's research focuses on the organizational and health care delivery system factors associated with variation in use of health services, and outcomes experienced by frail and chronically ill persons.

## APPENDIX 2

## Comparison of Elements Across Roybal Center RFAs Issued Since 1997

	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
<b>RFA Title: Edward R. Roybal Centers for ...</b>	...Translational Research on Aging	...Translational Research in the Behavioral and Social Sciences	...Research on Applied Gerontology
Publication Date	3-Nov-03	28-Oct-02	2-May-97
Letter of Intent Receipt Date	22-Dec-03	27-Dec-02	24-Jul-97
Application Receipt Date	22-Jan-04	21-Jan-03	24-Oct-97
Anticipated Date of Award	30-Sep-04	30-Sep-03	30-Sep-98
<b>Purpose and Subpurpose</b>			
<b>Improve the health, quality of life, and productivity of middle-aged and older people, through:</b>			
Facilitating the translation from the basic behavioral and social sciences (including human factors) to practical outcomes, including new technologies, for the benefit of the aged	♦	♦	
Facilitate the process of translating basic behavioral and social research theories and findings into practical outcomes that will benefit the lives of older people			♦
If possible also stimulating new "use-inspired" basic research in the behavioral and social sciences	♦	♦	
<b>Provide the research infrastructure to:</b>			
Stimulate ideas for new program development in the area of translational research in the social and behavioral sciences	♦	♦	
Enhance the productivity of relevant basic research or existing projects through translation into viable new products or technologies	♦		
Enhance the productivity of relevant research, including the promotion of translational research into existing projects		♦	
Facilitate acceleration in the development of new products or technologies to enhance the health and quality of life of older Americans	♦	♦	
Recruit new researchers to the area of translational research	♦		
Develop innovative networks of researchers with interests in translational research	♦	♦	
Assemble multidisciplinary teams to solve practical problems	♦		

## NIA/BSR Program Review of the Edward R. Roybal Centers

	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
Facilitate public-private partnerships including increased interaction and collaboration among academic researchers, and commercial interests or Governmental bodies	♦	♦	
Facilitate and accelerate application through studies and analyses of the translational process itself	♦	♦	
<b>Research Objectives</b>			
The underlying objective of this RFA is to strengthen the linkages (in both directions) between basic and applied research in order to accelerate the development of practical advances	♦		
The underlying objective of this RFA is to fund research Centers to accelerate the process of translation to address that need.		♦	
It is anticipated that Center investigators will use the Center resources to develop and pilot new and innovative ideas, and will then submit applications for P01s, R01s, or SBIRs to more fully implement ideas developed and piloted in the Roybal Centers	♦	♦	
Each Center should focus on a single organizing theme, rather than cover the spectrum of problems that may be addressed by the initiative as a whole.			♦
<b>Theme of proposed Center may be organized to examine:</b>			
Acceleration in the process of translating basic behavioral and social science research theories, methodologies, and findings about aging processes into practical outcomes and new technologies that would improve the lives of middle-aged and older people	♦	♦	
New "use-inspired basic research" as defined by Stokes	♦	♦	
The focus on investigating a practical problem will require applicants to show familiarity with the practical domain or environment being investigated as well as with relevant aspects of aging research. Such familiarity may be achieved by collaboration with specialists in the domain or community, or by prior experience in applying aging research successfully to this domain.	♦	♦	♦
One highly desirable feature of the centers will be a focus on special populations of older people.			♦
Because practical problems will likely benefit from cross-disciplinary attention, applications that reflect broad-based expertise are particularly encouraged.	♦	♦	
<b>Center Components</b>			
<b>Management and Administrative Core</b>	<b>REQUIRED</b>	<b>REQUIRED</b>	<b>REQUIRED</b>
Developing a strategic vision for the Center, coordinating all Center activities that fall within the Center's tactical framework	♦	♦	
Monitoring pilot projects that are part of the Center, assessing their progress, and reassigning resources as needed during the course of the award	♦	♦	♦
Encouraging and facilitating the development of networks among researchers, commercial interests, community interests, and Governmental entities	♦	♦	

## NIA/BSR Program Review of the Edward R. Roybal Centers

	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
Encouraging the pursuit of additional financial and/or material resources to support and expand Center research, for example through collaborating with commercial interests and submitting small business and traditional research applications to NIH; pursuing additional resources for non-research support services to, for example, promote dissemination, marketing, and/or corporate sponsorship of product development	♦	♦	
Maintaining any optional advisory committees that provide advice to the Principal Investigator on the overall direction and functioning of the Center, including the individual pilot projects.	♦		
Initiating and maintaining interactions with relevant community groups (e.g., community boards, businesses, health care facilities) in order to facilitate the conduct of the Center's pilot research projects	♦	♦	♦
Disseminating any practical outcomes generated by the Roybal Centers to the research community and general public	♦		
Ensuring overall management of the Center and compliance with NIH and NIA		♦	
Creating and maintaining an Advisory Committee that oversees the functioning of the Center, including the individual pilot projects		♦	♦
The PI of the Center will coordinate the day-to-day running of the management and administrative core; the Center PI should chair the Advisory Committee.		♦	♦
Providing administrative advice and guidance on possible applications that arise from the research projects, and materially assisting the application of these results			♦
Encouraged to collaborate with other NIA-funded Centers, including the Resource Centers and Coordinating Center for Minority Aging Research (RCMAR) and the Demography Centers		♦	
Facilitating collaborative work across the funded projects by coordinating data collection and providing technical support and guidance to the individual projects as needed			♦
Pilot Core or Pilot Projects	REQUIRED	REQUIRED	REQUIRED
The Center application must request funds to initiate small-scale pilot research (that is consistent with the theme of the Center grant)	♦	♦	♦
Permitted range of pilot research budget (direct costs per year)	\$10K-\$80K	\$15K-\$50K	< \$10K
Approximate number of pilot projects expected to be funded annually	3-5	2-4	2-4
While pilot projects may be proposed for one or two years' duration, it is expected that most will be funded for one year.	♦	♦	
Pilot projects will receive funds for one year only.			♦
The Center application must include examples of three pilot projects, and the description of each example should not exceed 4 pages	♦		
The Center application must include examples of two, and only two, of the pilot projects, and each example should not exceed 2 pages.		♦	
The application must describe a plan to develop, identify, review and monitor pilot projects (in a manner consistent with the overall goals of the Center)	♦	♦	♦

	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
<b>Dissemination Core</b>		OPTIONAL	REQUIRED
If a dissemination core is included, the applicant should address how research dissemination activities will be included, such as newsletter publication, presentations at scientific conferences, publication in scientific and popular press outlets, web sites that allow outcome and/or data access, marketing, and interface with community agencies and programs.		♦	♦
Also important are planned strategies for translating research findings into practical programs or services.			♦
<b>Component Projects</b>			REQUIRED
The individual projects that are part of the Center should have as their goal a practical end point -- improvement of some indicator or indicators of functioning in these different environments.			♦
A component project may start or terminate at any time during the project period, but at least two projects (and not more than four) must be active at all times. If additional outside support is available, the number of component projects may exceed four.			♦
The PI of the Center must be a PI on one of these component projects, and each component project must have a different PI.			♦
The projects should each relate to the central organizing theme of the Center.			♦
<b>Subject Recruitment Core</b>			RECOMMENDED
Applicants may choose to set-aside up to \$50,000 direct costs annually to establish and staff a recruitment core			♦
Applicants may choose to allocate more than \$50,000 to the recruitment core if ...[administration of] performance testing is directly relevant to hypotheses being addressed either by the Center as a whole or by individual projects.			♦
<b>Funding</b>			
Est. funds committed to fund applications (TC/yr for 5 years)	\$1.6M	\$3.0M	\$2.5M-\$3.0M
Expected number of new awards	4 to 6	8-10	up to 6
Mechanism of support	P30	P30	P50
Max. direct costs per award in the 1st year, exclusive of facilities and administrative costs on consortia			\$400K
Max. allowable annual total costs per grant.	\$360K	\$350K	
Allowable per annum inflation increase in subsequent years.	3%	3%	2%
<b>Eligibility</b>			
For-profit or non-profit organizations; Public or private institutions, such as universities, colleges, hospitals, and laboratories; Units of State or local governments; Eligible agencies of the Federal government; Faith-based or community-based organizations	♦	♦	♦

## NIA/BSR Program Review of the Edward R. Roybal Centers

	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
An Edward R. Roybal Center Grant (P30) requires relevant pre-existing research activity at the institution. Ideally, applicant institutions will be able to draw from a substantial base of relevant research.	♦	♦	
A minimum of one peer-reviewed and externally funded research project in the behavioral or social sciences is required. The project should be active at the time of application and the Principal Investigator (PI) of the Roybal Center application should be PI of the active project.		♦	
The principal investigator (PI) is required to have held, or to now hold, at least two R01 (or similar grants including a competing continuation as separate) grants as principal investigator. These grants must have been awarded as new or competing continuation awards within 10 years of the receipt date of this RFA.			♦
The investigative team, including the PI, is required to have held, or to hold, at least three such awards in the same interval.			♦
<b>Principal Investigators:</b>			
Any individual with the skills, knowledge, and resources necessary to carry out the proposed research is invited to work with their institution to develop an application for support	♦	♦	
<b>Special Requirements</b>			
<b>Annual Meeting</b>	REQUIRED	REQUIRED	OPTIONAL
Roybal Center Principal Investigators and Core leaders will be required to attend annual meetings in the first, second and third years of the project	♦		
Roybal Center Principal Investigators and Core leaders will be required to attend an annual meeting		♦	♦
Applicants should include a statement in the application indicating a willingness to participate in such meetings and to cooperate with other researchers in the exchange of data, materials, and ideas	♦	♦	♦
<b>Advisory Committee</b>	♦	♦	♦
The Advisory Committee should consist of at least five members drawn from diverse expertise. The PI of the Center should be the chair of the Advisory Committee.		♦	♦
During the first year of the Center, the Advisory Committee should meet at least twice (one of these meetings may be a conference call, but at least one meeting must be in person) to review the research plans and status of current projects. During the out-years of the Center, the Advisory Committee should meet at least once per year, either in person or by conference call. Minutes of these meetings should be prepared and provided to the NIA Program Official.		♦	♦
The Administrative Core budget should reflect the costs associated with communicating with and convening the Advisory Committee.		♦	
During the out years of the Center, the PI should send the Advisory Committee program reports and seek advice as needed, with the entire committee or with individual members.			♦
At least one member of the committee should have primary background in the proposed field of application through a service or commercial role in that field.			♦

## NIA/BSR Program Review of the Edward R. Roybal Centers

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At least one member of the committee should be an experienced researcher from another institution, whose only connection with the Center is through serving on the committee.			◆
Individual project leaders may serve on this committee. However, individual project leaders together with the Center PI cannot be a voting majority of the committee.			◆
<b>Approval of Component or Pilot Projects</b>			
NIA policy requires that the specific aims of any pilot project, in addition to the pilot project budget and Curriculum Vitae of the pilot investigator, must be submitted to the NIA Program Official for approval before funds may be expended.	◆	◆	
Major changes in individual projects, the deletion of projects, or the addition of new projects should be approved by the NIA prior to taking effect.			◆
All Centers should propose at least one component project that has a plan for field research. The possible practical outcomes of such work should be clearly stated.			◆
It is also anticipated that the majority of projects funded will have an intervention phase. Therefore, applications that do not include an intervention phase must explain why no intervention is appropriate.			◆
Interventions that are selected must be based on sound theory, have supporting pilot data and show a methodologically sound plan for evaluation of the intervention. The evaluation should contain a plan to monitor intended effects of the intervention and some means to monitor unintended and negative consequences.			◆
<b>Review Criteria</b>			
<b>Overall Center</b>			
Significance of the proposed mission or theme of the Center. If the aims are achieved, how do they advance the translation of behavioral and social science research into practical advances to benefit the health and well being of older Americans or advance "use-inspired basic research"?	◆	◆	
Considerable weight will be given to: (1) significant on-going research activity that is relevant to the theme of the proposed Center and (2) that demonstrate the ability to translate a body of basic research into significant practical outcomes.	◆	◆	
Demonstrated potential to act as a conduit between basic behavioral and social science research and applied outcomes (in either or both directions). This will be judged by evidence of past involvement in related research and the specific plans for seeking applied outcomes as described in the application.	◆	◆	◆
The theoretically and empirically supported rationale for the particular approach to extending basic behavioral and social science research into applied areas,...	◆	◆	◆
... and the degree to which the proposed approach is innovative and employs novel concepts, approaches or methods.			◆
Considerable weight will be given to the innovativeness of the approaches chosen.	◆		

## NIA/BSR Program Review of the Edward R. Roybal Centers

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Commitment as stated in the application to collaborate with commercial, non-profit or governmental interests to support and expand Center research. Such commitment should be demonstrated by letters of support regarding new collaborations and/or evidence of past partnerships. Proposed collaborative activities must increase the opportunities for research and translation.	♦	♦	
Evidence of institutional support, such as commitment from the host institution to the research activity and availability of appropriate facilities for the research activities proposed.	♦	♦	♦
Appropriateness of the budget for the Center.	♦	♦	♦
The leadership ability, relevant experience, scientific stature and the appropriateness of the time commitment of the P.I. A past history of applying basic behavioral and social research in a relevant area will be an important advantage.	♦	♦	
The extent to which the scientific environment and proposed collaborative arrangements will lead to a successful interplay between basic and applied social and behavioral science.	♦		
The likelihood that the scientific environment and proposed collaborative arrangements will lead to the probability of success		♦	
Quality of plans to ensure that the outcomes of the translational research will directly improve the quality of life of older Americans.		♦	
Quality of coordination of center activities around a theme, as described in the cores			♦
Commitment from the host institution to the research activity and availability of appropriate facilities for the research activities proposed			♦
<b>Management and Administrative Core</b>			
Whether the lines of authority and the administrative structure are designed for effective Center management. Whether the administrative structure maximizes the Center's capability to take advantage of research opportunities.		♦	
The qualifications, responsibilities and effectiveness of senior leaders. Appropriateness of percent effort of senior leaders.	♦	♦	
Appropriateness of the duties and percent efforts of administrative staff of the Center in terms of their qualifications and contributions to the specialized needs and conduct of the Center's theme.	♦	♦	
Whether the administrative structure maximizes the Center's capability to take advantage of research opportunities.	♦		
The effectiveness of the Center's internal planning activities and the Advisory Committee as described		♦	
Quality of the evaluation plan for monitoring the effectiveness of proposed interventions			♦
Leadership ability, relevant experience in appropriate areas, and scientific stature of the PI. The time commitment of the Center PI must be sufficient to show substantial personal supervision of the various activities of the Center. A past history of applying basic behavioral and social research in a relevant area will be an important advantage			♦
Qualifications and experience of members of the advisory committee to the Center			♦

## NIA/BSR Program Review of the Edward R. Roybal Centers

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<b>Pilot Core</b>			
Quality, innovativeness and importance of the pilot studies.	♦		
Quality, innovativeness and importance to the theme of the Center		♦	
Adequacy of the proposed process for developing, soliciting, reviewing, selecting, monitoring and evaluating pilot projects.	♦	♦	
The qualifications, responsibilities and effectiveness of Pilot Core senior leaders.	♦	♦	
Appropriateness of percent effort of senior leaders.		♦	
Relevance of the proposed pilot projects to the theme of the Center		♦	
Degree to which pilot project funds will be used to stimulate projects that will promote the theme of the Center		♦	
Quality of the plan to develop, solicit, identify, review, monitor, and evaluate the pilot projects			♦
<b>Component Projects</b>			
Scientific and technical significance and originality of the component projects.			♦
Appropriateness and adequacy of the experimental approach and methodology proposed by the component projects to carry out the research			♦
qualifications and experience of the component project investigators and appropriateness of their investment of time in the project			♦
<b>Dissemination Core (where applicable)</b>			
Quality of the plans for dissemination activities, such as newsletters, web sites, publications and presentations, interface with community agencies and programs, interviews with electronic media, and planned strategies for translating research findings into practical programs or services.		♦	♦
Scientific value and public good that might result from any proposed dissemination activities.		♦	
The qualifications, responsibilities and effectiveness of Dissemination Core senior leaders.		♦	
Appropriateness of percent effort of senior leaders.			
<b>Subject Recruitment Core</b>			
The adequacy of plans to include both genders and minorities and their subgroups as appropriate for the scientific goals of the research. Plans for the recruitment and retention of subjects will be evaluated			♦
Plans to liaise, consult, recruit, and collect data from participants			♦
<b>Additional Review Criteria</b>			
Protection of human subjects from research risk.	♦	♦	♦
Inclusion of women and minorities in research.	♦	♦	♦
Plans for the recruitment and retention of subjects will also be evaluated.	♦	♦	♦
Care and use of vertebrate animals in research.	♦	♦	♦
The adequacy of the proposed plan to share data.		♦	

## NIA/BSR Program Review of the Edward R. Roybal Centers

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	AG-04-007 2003	AG-03-002 2002	AG-97-005 1997
The reasonableness of the proposed budget and the requested period of support in relation to the proposed research	♦	♦	
<b>Award Criteria</b>			
Scientific Merit (as determined by peer review)	♦	♦	♦
Availability of funds	♦	♦	♦
Programmatic priorities and/or balance	♦	♦	♦

**APPENDIX 3**  
**Primary CRISP Terms for Active Roybal Center Grants, 2007**

	Primary CRISP Term (•) Secondary CRISP Term (2)	Ongoing since 1993		Ongoing since 1998		Ongoing since 2004				
		U Alabama	Cornell U	UIC - Midwest	UIUC	Indiana U	Oregon Hea Sci	Princeton U	RAND (Goldman)	RAND (Kapteyn)
General	Aging	•			•	•	•	•		
	Human middle age (35-64)			•			2			
	Human old age (65+)		•			2	2	2	2	
	Geriatrics					•		•		•
	Biomedical facility	•			•	•		•		•
	Information dissemination			•			2			
	Health science research support					•			•	•
Health and health conditions	Health		•					2		
	Chronic disease/disorder					•				
	Health behavior			•						•
	Health care policy							•		
	Health science research	•								
	Functional ability			•		•		2		
	Patient care management					•		2		2
	Public health			•				2		
	Quality of life		•	•		2	•			
	Self care					•				2
	Travel	•								
Psychosocial aspects	Cognition disorder, inclu dementia				•	2				
	Computer human interaction					•				
	Decision making							2	•	•
	Mental health epidemiology									•
	Psychological adaptation						•			
	Psychological aspect of aging									•
	Social psychology		•							
	Socioeconomics								•	
Methodology	Computer simulation							•		
	Computer system design/evaluation						•			2
	Data collection methodology/evaluation						•	•		
	Model design or method development						•	•		

## APPENDIX 4

### Gerontological Society of America Press Release March 31, 2003

#### Finding Ways to Best Help Older Americans

##### *Lessons Learned at the Roybal Centers for Applied Gerontology*

How can the lives of older persons be improved? What services and resources work well? What strategies are best for promoting independence, reducing physical vulnerability, and easing psychological distress? In other words, what works for the aging population, why does it work, and with whom does it work best?

Researchers working through the Edward R. Roybal Centers for Applied Gerontology, established one decade ago by the National Institute on Aging, have attempted to answer these issues. The [March 2003 special issue of \*The Gerontologist\*](#) presents the key problems researchers faced and how they were addressed in their efforts to translate theory and basic research into practical outcomes for older adults. Guest editors for this special issue were Karl Pillemer of Cornell University, Sara Czaja of the University of Miami, and Richard Schulz of the University of Pittsburgh.

Karlene Ball and Virginia Wadley of the University of Alabama and Daniel Roenker of Western Kentucky University argue that field research offers the best opportunity for ecological validity. In their study they draw examples from ongoing, longitudinal Roybal Center study of driving competence that is being conducted in Department of Motor Vehicles field sites. They also argue that assessing Useful Field of Vision (UFOV) and its relationship to driving competence provides a good illustration that research can accomplish both theoretical and applied goals. "On the basis of ... preliminary data from the large-scale Maryland study we have evidence that UFOV is highly predictive of crash involvement in older drivers."

The study by Sara J. Czaja and Joseph Sharit of the University of Miami shows how aging and performance of real-world computer-based work tasks are used to provide information about human performance that can be translated into solutions for real-world problems.

Karl Pillemer, J. Jill Sutor of Louisiana State University, and Elaine Wethington of Cornell University demonstrate that attention to theory and basic research can shed light on the effects of family caregiving and can lead to creative intervention designs. Pillemer and his colleagues noted that "collaboration between researchers and clinicians" who specialize in diagnosing and treating aging-related problems can ultimately bring about a balance between social scientists' attention to theory and the grounded experience of human needs provided by practitioners.

One of the reasons some groups are underrepresented in health promotion research is because it is difficult to recruit and retain volunteers from these groups. Jan Warren-Findlow, Thomas R. Prohaska, and David Freedman of the University of Illinois at Chicago look at strategies for increasing participant recruitment and retention. They argue that program design decisions can significantly influence the participation of

underrepresented populations in exercise health promotion programs for older African Americans. "Using African American staff, recruiting in African American settings, providing facilities in the local community, and tailoring the program content" are effective tools in health promotion research.

The Roybal Centers have given particular emphasis to widespread dissemination of information to practice audiences. However, it is also true that the results of interventions are often underutilized, and practitioners may be unaware that programs exist that could be useful to their clients. Marianne Farkas, Alan M. Jette, Sharon Tennstedt, Stephen M. Haley, and Virginia Quinn of the Roybal Center for the Enhancement of late Life Functioning at Boston University look at dissemination and utilization goals. They argue that a strategic approach that includes exposure, experience, expertise and embedding are necessary for successful dissemination efforts.

Finally, an underlying premise of the Roybal Centers is that interventions should be grounded in theory and basic research findings. In reality, however, the connections between theory, research, and interventions are often tenuous. Scott C. Brown and Denise C. Park of the Edward R. Roybal Center on Aging and Cognition at the University of Michigan provide an example of the benefits of making such connections within the field of cognitive science. They demonstrate how theories and mechanisms of cognitive aging provide fertile ground for investigation such issues such as how adults process medical information and how medical behavior like taking medication can be improved.

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*The Gerontologist* is a refereed publication of [The Gerontological Society of America](#), the national organization of professionals in the field of aging.

You can access the [Special Issue Table of Contents and study abstracts](#) online.

## APPENDIX 5

### **Table of Contents to *The Gerontologist* Special Issue on Challenges of Translational Research on Aging: The Experience of the Roybal Centers**

*Finding the Best Ways to Help: Opportunities and Challenges of Intervention Research on Aging*  
Karl Pillemer, Sara Czaja, Richard Schulz, and Sidney M. Stahl  
*Gerontologist* 2003 43, Special Issue I: 5-8.

*Practically Relevant Research: Capturing Real World Tasks, Environments, and Outcomes*  
Sara J. Czaja and Joseph Sharit  
*Gerontologist* 2003 43, Special Issue I: 9-18.

*Integrating Theory, Basic Research, and Intervention: Two Case Studies From Caregiving Research*  
Karl Pillemer, J. Jill Suitor, and Elaine Wethington  
*Gerontologist* 2003 43, Special Issue I: 19-28.

*Obstacles to Implementing Research Outcomes in Community Settings*  
Karlene Ball, Virginia Wadley, and Daniel Roenker  
*Gerontologist* 2003 43, Special Issue I: 29-36.

*Challenges and Opportunities in Recruiting and Retaining Underrepresented Populations Into Health Promotion Research*  
Jan Warren-Findlow, Thomas R. Prohaska, and David Freedman  
*Gerontologist* 2003 43, Special Issue I: 37-46.

*Knowledge Dissemination and Utilization in Gerontology: An Organizing Framework*  
Marianne Farkas, Alan M. Jette, Sharon Tennstedt, Stephen M. Haley, and Virginia Quinn  
*Gerontologist* 2003 43, Special Issue I: 47-56.

*Theoretical Models of Cognitive Aging and Implications for Translational Research in Medicine*  
Scott C. Brown and Denise C. Park  
*Gerontologist* 2003 43, Special Issue I: 57-67.

**APPENDIX 6**  
**Pilot Projects Active in 2006-2007, As Reported in 2007 Progress Reports**

Institution	Roybal Center Pilot Titles	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
<b>U Alabama</b>	Predictors of mobility decline among older adults					
	Planning a multi-site clinical trial on the impact of the driving assessment clinic					
<b>Indiana U</b>	CADRE: the Collaborative Alzheimer Disease Research Exchange					
	SAMOA: Self-Management and Mood in Older Adults					
	The Exploration of Barriers to Activity and Participation Following Stroke					
	Self-Management for Patients with Chronic Musculoskeletal Pain - Finding What Works					
	Developing Self-Report Fitness Measures					
<b>Stanford U</b>	Age differences in emotion and cognitive decision-making					
	The benefits and costs of health insur choice among older adults: The case of Medicare prescription drug plans					
	Age, affect valuation, and health-related decision making					
	Choosing not to choose: Ambiguity aversion in younger and older adults					
<b>RAND (Goldman)</b>	Tools for efficient allocation of fall-prevention resources					
	Adverse selection, population aging, and the market for supplementary health insurance					
	The value of pharmaceutical innovations for the elderly: The case of antidepressants					
	Rising Medicare expenditures for the oldest Medicare beneficiaries					
	Continuous Development of the Future Elderly Model					
	Welfare Analysis of Medicare Part D					
<b>UIC</b>	Health promotion for people with intellectual disabilities: Train-the-trainer dissemination					
	ProCEED-Prostate cancer study of ethnicity, exercise and diet					
	Assessing the contextual characteristics of elders and their support systems					
	Meeting the challenges of MS: A program for caregivers					
	Stress management for direct care workers serving adults with ID/DD					
	Factors related to exercise among people with osteoarthritis					
	Assessing the Impact of Secondary Conditions on the Functional Status of Older Adults					
	Adherence Dynamics for Whole Food Interventions in Black Men					

## NIA/BSR Program Review of the Edward R. Roybal Centers

Institution	Roybal Center Pilot Titles	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008
Princeton	National well being accounts/American Time Use Survey					
	Cross national comparisons: French and American women					
	Developing the Day Reconstruction Method (DRM): Focal activities (or Evaluating Yesterday)					
	Developing the DRM: Test-retest reliability					
	Race and College Experience					
	Global vs. Episodic Reports of Consumer Experiences					
	Online version of DRM					
RAND (Kapteyn)	Financial Literacy and Retirement Planning					
	Investor Motivation					
	Role of Default Options, including in Employer-Sponsored Defined Contribution Retirement Plans					
	Decision Making Competence and Risk Perceptions					
Oregon Health Sciences U	The role of technology for healthy aging among rural and minority older women					
	Medication adherence, sleep, and patterns of morning activity in healthy elders and MCI patients					funded by Intel
	A location based system for activity tracking of senior adults outside the home					
	Electronic devices as memory aids for MCI patients					
	Motor and cognitive aging in a nonhuman primate model					
UIUC	External cognitive aids and patient/provider collaboration					
	Variability of cognitive processing in older adults: the role of cardiovascular fitness					
	Driver safety training					
	Differences in neurological activities of Americans and Chinese when viewing target objects with bizarre background					
	Aerobic exercise and neurocognitive function in APOE epsilon 4 carriers					
	Exploring engagement in adulthood: A comprehensive methodological approach					
	Aging, memory, and the wording of text					
Cornell	Aging Artists in New York City					
	Cultural Life Review Study among African-American and Caribbean-American Older Adults					
	Collaboration with the Institute for Urban Family Health					
	Adaptation to Chronic Pain: A Daily Process Analysis					
	Health Care Decision Making in the Elderly					

**APPENDIX 7**  
**Interview Questions for Roybal Center Principal Investigators**  
(Rev. 6-25-07)

<b>Outcomes and Accomplishments</b>	
1	What do you consider to be the top 1 or 2 accomplishments of your center (e.g., impact in a particular topic area, sharing of novel or valuable data resource, major conference or workshop) and what is the basis for your assessment? A. What indicators do you consider to be the most appropriate for capturing successful translation/dissemination?
2	Have pilot projects led to peer-reviewed NIH applications? Which mechanisms? Any successfully funded? Can you give an example of a particularly productive or accomplished pilot project?
3	Did your Roybal Center and/or pilot projects lead to recruitment of new investigators to work on translational research? A. About how many investigators who are now working within the Center were not part of the original core team? B. At what rank were pilot PIs (e.g., graduate student, post-doc, assistant professor, associate professor, full professor, adjunct)? C. Were pilot PIs new to aging or translation research?
4	To what extent can you comment on the value-added of the Roybal Centers and what would NOT have been accomplished had center funds not been available? What evidence do you look for in helping to assess if the Centers are (or are not) adding value? (Value-added activities refer to those that have a quantifiable impact on quality of life; e.g., improving savings in older populations, program delivery, etc.)
<b>Networks</b>	
5	How much contact is there between your Center and other NIA/BSR-funded Center programs (e.g., Demography and Economics, RCMARs)? With NIH-funded P01s? Please give examples.
<b>Research Translation</b>	
6	What obstacles, if any, exist that hinder translation in your area (e.g., institutional constraints, policy changes needed at the state or Federal government level, inadequate funding).
7	Are there steps that BSR/NIA can take to help facilitate translation?
8	Should there be “term limits” for Center grants that seek to realize research translation?
9	Should there be greater emphasis on innovation, especially with respect to fields not traditionally as well-supported?
10	What is your perception of the effectiveness of the pilot projects to stimulate dissemination and distribution of knowledge versus more developed component projects? On what measures do you base your impression?
<b>Other Program Parameters</b>	
11	What, if any, problems of program design, process, or management (e.g., RFA elements, review criteria) are affecting the success of the Centers program? What steps could be taken to address these problems or to enhance program performance?
12	Is there anything you would want to change in future RFAs?
13	Are there internal or external opportunities for leveraging Center funds that should be explored? If so, please provide concrete examples (e.g. partnership with industry, foundations, etc.)
14	Is the level of support adequate to carry out the Center objectives?
15	Are administrative supplements a valuable vehicle for taking advantage of new opportunities?
16	Does the number of centers seem about appropriate? (Should there be fewer centers, each with more funding? More centers, each with less funding?)

**APPENDIX 8**  
**Evaluation Questions for Panel Members**

1	Did the Centers as a whole meet the stated objectives of the RFA?
2	Are the Centers' accomplishments significant on the whole? Can you comment on the impact on your respective field(s)?
3	To what extent can you comment on the value-added of the Roybal Centers and what would NOT have been accomplished had center funds not been available? What evidence do you look for in helping to assess if the Centers are (or are not) adding value? Value-added activities refer to those that have a quantifiable impact on quality of life; e.g., improving savings in older populations, program delivery, etc.
4	Are foci sufficiently clear or too diffuse?
5	Are there steps that BSR/NIA can take to help facilitate translation?
6	Should there be "term limits" for Center grants that seek to realize research translation?
7	Should there be greater emphasis on innovation, especially with respect to fields not traditionally as well-supported?
8	What is your perception of the effectiveness of the pilot projects to stimulate dissemination and distribution of knowledge versus more developed component projects? On what measures do you base your impression?
9	What, if any, problems of program design, process, or management (e.g., RFA elements, review criteria) are affecting the success of the Centers program? What steps could be taken to address these problems or to enhance program performance?
10	Is there anything you would want to change in future RFAs?
11	Are there internal or external opportunities for leveraging Center funds that should be explored? If so, please provide concrete examples (e.g., partnership with industry, foundations, etc.)
12	Is the level of support adequate for the Roybal Centers Program? Does the number of centers seem about appropriate? (Should there be fewer centers, each with more funding? More centers, each with less funding?)