Progress Report Scanning Cover Sheet

5R01HD042386-05

PI Name: LOVELL, MARK

Org: UNIVERSITY OF PITTSBURGH AT PITTSBURGH

Start Date: 09/01/2005

Snap: Y

Appl ID: 6946328

Rec'd Date: 07/06/2005

Form Approved Through 09/30/2007 OMB No. 0925-0001

Department of Health and Human Services
Public Health Services

Grant Progress Report

Review Group	Type	Activity	Grant Number
	5	R01	HD42386-5

Total Project Period
From: 09/25/2001 Through: 08/31/2006

Requested Budget Period
From: 09/01/2005 Through: 08/31/2006

1. TITLE OF PROJECT
fMRI & Sports Related Concussion

2a. PRINCIPAL INVESTIGATOR OR PROGRAM DIRECTOR (Name and address, street, city, state, zip code)
Mark R. Lovell, Ph.D., ABPN
UPMC Center for Sports Medicine
3200 South Water Street
Pittsburgh, PA 15203

3. APPLICANT ORGANIZATION (Name and address, street, city, state, zip code)
University of Pittsburgh
Office of Research
350 Thackeray Hall
Pittsburgh, PA 15260

2b. E-MAIL ADDRESS
lovellmr@upmc.edu

4. ENTITY IDENTIFICATION NUMBER
EIN/TIN Number

2c. DEPARTMENT, SERVICE, LABORATORY, OR EQUIVALENT
Orthopaedic Surgery

2d. MAJOR SUBDIVISION
School of Medicine

5. TITLE AND ADDRESS OF ADMINISTRATIVE OFFICIAL
Allen A. DiPalma
Interim Director, Office of Research
350 Thackeray Hall
Pittsburgh, PA 15260
E-MAIL: ornih@offres.pitt.edu

JUL 05 2005

6. HUMAN SUBJECTS
☐ No ☒ Yes
6a. Research Exempt ☒ No ☐ Yes
6b. Human Subjects Assurance No. FWA00006790
If Exempt ("Yes" in 6a): Exemption No.
6c. NIH-Defined Phase III Clinical Trial ☒ No ☐ Yes
If Not Exempt ("No" in 6a): IRB approval date 11/18/04
☐ Full IRB or ☒ Expedited Review

7. VERTEBRATE ANIMALS
☒ No ☐ Yes
7a. If "Yes," IACUC approval Date
7b. Animal Welfare Assurance No.

8. COSTS REQUESTED FOR NEXT BUDGET PERIOD
8a. DIRECT $420,790
8b. TOTAL $588,429

9. INVENTIONS AND PATENTS
☐ No ☒ Yes If "Yes," ☒ Previously Reported ☐ Not Previously Reported

10. PERFORMANCE SITE(S) *(Organizations and addresses)*
UPMC Center for Sports Medicine
3200 South Water Street
Pittsburgh, PA 15203

UPMC Presbyterian Hospital
MR Research Center, 200 Lothrup St.
Pittsburgh, PA 15213

Brain Imaging Research Center
3025 E. Carson Street, Room 143
Pittsburgh, PA 15203

11a. PRINCIPAL INVESTIGATOR OR PROGRAM DIRECTOR *(Item 2a)*
Mark R. Lovell. Ph.D.
TEL 412-432-3670
FAX 412-432-3686

11b. ADMINISTRATIVE OFFICIAL NAME *(Item 5)*
Allen DiPalma
TEL 412-624-7400
FAX 412-624-7409

11c. NAME AND TITLE OF OFFICIAL SIGNING FOR APPLICANT ORGANIZATION *(Item 14)*
NAME Carol A. Crawford
TITLE Assistant Director, Office of Research
TEL 412-624-7400 FAX 412-624-7409
E-MAIL offres@offres.pitt.edu

12. Corrections to Page 1 Face Page

13. PRINCIPAL INVESTIGATOR/PROGRAM DIRECTOR ASSURANCE: I certify that the statements herein are true, complete and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. *I agree to accept responsibility for the scientific conduct of the project* and to provide the required progress reports if a grant is awarded as a result of this application.	SIGNATURE OF PI/PD NAMED IN 2a. *(In ink. "Per" signature not acceptable.)*	DATE 6/30/05
14. APPLICANT ORGANIZATION CERTIFICATION AND ACCEPTANCE: I certify that the statements herein are true, complete and accurate to the best of my knowledge, and accept the obligation to comply with Public Health Services terms and conditions if a grant is awarded as a result of this application. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties.	SIGNATURE OF OFFICIAL NAMED IN 11c. *(In ink. "Per" signature not acceptable.)* Carol A. Crawford	DATE 6-30-05

Principal Investigator/Program Director (Last, First, Middle): Lovell, Mark R.

DETAILED BUDGET FOR NEXT BUDGET PERIOD – DIRECT COSTS ONLY	FROM 09/01/2005	THROUGH 08/31/2006	GRANT NUMBER 5R01HD42386-5

PERSONNEL (Applicant organization only)		TYPE APPT. (months)	% EFFORT ON PROJ.	DOLLAR AMOUNT REQUESTED (omit cents)		
NAME	ROLE ON PROJECT			SALARY REQUESTED	FRINGE BENEFITS	TOTALS
Mark Lovell	Principal Investigator				23,267	115,967
Michael Collins	Co-Investigator				9,824	48,964
Fernando Boada	Co-Investigator				4,107	20,468
James Becker	Co-Investigator				1,074	5,351
Jamie Pardini	Study Coordinator	#	%	$	7,966	35818
Rebecca Roush	Research Associate				9,012	40,521
Katheryn Dunfee	Research Associate				2,413	10,849
Denise Davis	Research Faculty				811	4,043
SUBTOTALS →				223,507	58,474	281,981

CONSULTANT COSTS William Eddy, Ph.D.		18,000
EQUIPMENT *(Itemize)*		
SUPPLIES *(Itemize by category)* FMRI Studies		43,830
TRAVEL For PI to present findings at national conferences		1,500
PATIENT CARE COSTS	INPATIENT	
	OUTPATIENT	
ALTERATIONS AND RENOVATIONS *(Itemize by category)*		
OTHER EXPENSES *(Itemize by category)* Patient Parking		334
SUBTOTAL DIRECT COSTS FOR NEXT BUDGET PERIOD		$ 345,645
CONSORTIUM/CONTRACTUAL COSTS	DIRECT COSTS	50,774
	FACILITIES AND ADMINISTRATIVE COSTS	24,371
TOTAL DIRECT COSTS FOR NEXT PROJECT PERIOD *(Item 8a, Face Page)*		$ 420,790

= Number of Months Devoted to Project

% = Percentage of Effort

$ = Insitutional Based Salaries

BUDGET JUSTIFICATION	GRANT NUMBER 5R01HD42386-5

Provide a detailed budget justification for those line items and amounts that represent a significant change from that previously recommended. Use continuation pages if necessary.

There are no significant changes in the budget from that previously recommended.

CURRENT BUDGET PERIOD	FROM 09/01/2005	THROUGH 08/31/2006

Explain any estimated unobligated balance (including prior year carryover) that is greater than 25% of the current year's total budget.

There remains an unused balance from the previous budget period, that will possibly be greater than 25%. This continues to be most closely tied to our initial difficulties in subject recruitment (though that gap is narrowing) and a few new MR technical difficulties (which have since been resolved). This amount, therefore is not unobligated, as we still intend to meet our stated goal of 250 participants by the project's end. We are requesting a carry over of unused funds allocated for fMRI and ImPACT procedures, as well as for parking, control subject payment, etc., from the past budget period to the budget period covered by this non-competing renewal. We are also not requesting additional funds for ImPACT studies or control subject payments, in anticipation of budget carryover funds availability. We have had great success in significantly increasing subject recruitment over the past year, and through the use of two fMRI sites and the addition of part-time assistance with running the scanners as well as new staff members at our clinic, we anticipate an even higher volume of eligible participants this year.

Principal Investigator/Program Director (Last, First, Middle): Lovell, Mark R.

PROGRESS REPORT SUMMARY	GRANT NUMBER 5R01HD-42386-5	
	PERIOD COVERED BY THIS REPORT	
PRINCIPAL INVESTIGATOR OR PROGRAM DIRECTOR Mark R. Lovell, Ph.D.	FROM 09/01/2005	THROUGH 07/01/2006

APPLICANT ORGANIZATION
University of Pittsburgh

TITLE OF PROJECT (Repeat title shown in Item 1 on first page)
fMRI and Sports Related Concussion

A. Human Subjects (Complete Item 6 on the Face Page)
Involvement of Human Subjects ☒ No Change Since Previous Submission ☐ Change

B. Vertebrate Animals (Complete Item 7 on the Face Page)
Use of Vertebrate Animals ☒ No Change Since Previous Submission ☐ Change

SEE PHS 2590 INSTRUCTIONS.
WOMEN AND MINORITY INCLUSION: See PHS 398 Instructions. Use Inclusion Enrollment Report Format Page and, if necessary, Targeted/Planned Enrollment Format Page.

Has there been a change in the other support of key personnel since the last reporting period? Yes. Dr. V. Andrew Stenger has left the University of Pittsburgh, and will no longer be a co-investigator on the grant. Dr. Howard Yonas has also left the University of Pittsburgh, and will no longer be a co-investigator on the grant. Otherwise, there is no change in other support.

Will there be, in the next budget period, a significant change in the level of effort for key personnel from what was approved for this project? No, there will not be a significant change in effort level for any key personnel.

Is it anticipated that an estimated unobligated balance (including prior year carryover) will be greater than 25 percent of the current year's total budget? There will possibly be a carryover of a balance greater than 25 percent of the current year's total budget, though most of this balance is obligated in that the funds are designated for the fMRI scans, ImPACT tests, parking costs, and control participant reimbursement for remaining participants. Though we are still slightly behind schedule on the recruitment of concussed individuals, we have made great progress and continue to implement new measures to increase our subject pool (see below). Our control recruitment is on schedule. Therefore, we would like to have permission to carryover the balance as we do feel we will be able to recruit all anticipated 250 participants before the study's end and will need those funds for that data collection and completion of the study.

A. Specific Aims: The overall specific aims for the project have not been modified. Our aims continue to include the following: (1) to describe fMRI patterns of brain activation that typically occur with specific cognitive deficits identified using a traditional (n-back) and new (ImPACT/arrow) test of neuropsychological function in individuals sustaining sports-related concussion, (2) to describe typical fMRI activation associated with subjective components of sports-related concussion and post-concussion syndrome, (3) to determine the effect of multiple sports-related concussions on cognitive functioning and fMRI activation, (4) to define gender and age effects on concussion-related changes in fMRI activation and cognition, and (5) to correlate concussion-related fMRI, cognitive, and symptomatic changes with academic performance. We plan to study 250 high school and college athletes by the end of the fifth year in order to address these specific aims.

B. Studies and results: We are currently in the final stages of our fourth year of the project. This past year represented the project's third football season, Fall, 2004. Due to the resolution of early technical difficulties in the fMRI laboratory, as well as to our acquisition of an additional scanning site, we were able to substantially increase enrollment in the study throughout the year to our present enrollment of 149. Overall referrals to our sports concussion clinic continue to increase, many more area schools have adopted the ImPACT software program, and we expect even higher numbers of potential participants in the coming football season, as well as throughout the year. In addition, we have been able to scan more than one or two concussed athletes per day (when they present to the clinic and meet criteria for the study), because we have continued to utilize a part-time research associate for administering the fMRI protocol. Therefore, we will again this year be able to have two athletes running through the study at the same time, though at two different sites. This should further increase our number of participants.

Regarding non-injured control participants, we have been quite successful in recruiting controls, should have all control subjects recruited and completed by year's end. This year, we attempted to improve minority participation in the study through giving educational talks to athletic trainers from all Pittsburgh area schools, which included schools with a higher minority representation. We also sent IRB-approved fliers providing information and contact information about the study that athletic trainers could display in locker rooms and/or in their offices.

At the time of our previous progress report, we replaced the "color match" in-scanner task with a different go-no-go task, an "arrow" task, that has been administered in the scanner over the course of this past year. This task has been demonstrated in other brain activation studies to produce activation in the prefrontal cortex, as had the "color match" task. In addition, changes in activation on this task with various disease states have been demonstrated in other studies. We have now acquired a significant amount of data for this task, and are beginning to process this data as well.

Regarding data analysis, we have begun examining the functional and ImPACT data from many of the participants who have completed the study. At this point, the functional overlays for most participants have been completed, and initial comparisons on the n-back tasks both within and between subjects have been made. Our core group has been meeting on an almost weekly basis to address statistical issues, as well as issues that surround the acquisition, coding, and interpretation of fMRI data. The initial analysis was focused on determining if the control group and the concussed had similar activation patterns at time point two, the "recovered" time point. We have been pleased with these initial results, as the activation patterns at time two are similar as hypothesized. These results provide early validation for ImPACT as a measure of recovery, and therefore potentially safer return to play. In addition, we are examining details of individual cases (such as concussion history and severity of present concussion), to gain more insight into activation pattern as it corresponds to ImPACT data. We have prepared our first publication, that will be submitted to Nature within the next week. This paper describes the relation of functional outcomes to recovery.

We have identified three functional circuits which are correlated with duration of injury/time to return to play, as well as with various post-concussion symptom clusters. We have also completed a factor analysis which identified a four factor structure to ImPACT's Post-Concussion Symptom Scale, which will be used to further explore the relation between changes in functional activiation and symptom status. In addition, there are several methodology papers at various stages of completion. Also, initial results were presented national, and international conferences including the 2nd International Conference on Sports Concussion (Prague, Czech Republic), and the Sports Concussion Conference (Pittsburgh, PA).

C. Significance: The potential implications of our project remain highly significant in the medical and sports medicine fields. Through our large sample size, as well as through using control subjects and obtaining data from concussed athletes once recovery is achieved, we will develop an understanding of some of the physiological changes in cognition that occur with concussion. In addition, we will be able to provide information about cognitive functioning in concussed athletes once the athlete has healed, in order to determine if there are any differences between controls with no concussion history and recovered concussed athletes. In addition, we also hope to document changes in a computerized neuropsychological test (ImPACT) that correspond with changes in functional MRI data during concussion, that then return to baseline levels at recovery. Close correspondence of cognitive test performance and functional performance will increase our understanding of recovery, as well as assist healthcare practitioners in making more accurate and safer return-to-play decisions. By examining gender and age differences, we will gain even more detailed insight into the physiological and cognitive effects of concussion, as well as insight into the duration and pattern of recovery in these different groups. This study may also have a significant impact in the research area of registration, analysis, and interpretation of fMRI data across large groups of subjects. There are many intricacies and issues regarding normalization of functional activity across group, developing new ways to address and interpret idiosyncratic functional data, and determining optimal methods of acquisition, interpretation, and comparison.

D. Plans: During the next year, we plan to continue accruing both control and concussed participants, and expect to be especially busy during our final football season. In addition, we will be submitting many scientific articles to medical, sports, and imaging journals, as well as submitting findings to conferences. Also, data analysis will continue, as will our weekly statistics meetings addressing issues specific to data interpretation. Overall, we believe we can successfully accrue all remaining subjects in the coming year, as well as continue with data analysis, all while continuing to present new findings to the scientific community. In order to continue to increase minority participation so that it becomes representative of the Pittsburgh population as a whole, we plan to provide educational talks about concussion and concussion management to parent groups, student/athlete groups, and continue to encourage all athletic trainers to refer any concussed athlete for evaluation and proper management at the concussion clinic.

E. Publications: There are currently no publications resulting directly from this grant, though the initial manuscript will be submitted to Nature in the next few weeks, and other manuscripts are at various states of preparation.

F. Project-Generated Resources: There are no project-generated resources.

Principal Investigator/Program Director (Last, first, middle): Lovell, Mark Robert

GRANT NUMBER
5R01HD42386-5

CHECKLIST

1. PROGRAM INCOME ***(See instructions.)***
All applications must indicate whether program income is anticipated during the period(s) for which grant support is requested. If program income is anticipated, use the format below to reflect the amount and source(s).

Budget Period	Anticipated Amount	Source(s)

2. ASSURANCES/CERTIFICATIONS ***(See instructions.)***
In signing the application Face Page, the authorized organizational representative agrees to comply with the following policies, assurances and/or certifications when applicable. Descriptions of individual assurances/certifications are provided in Part III of the PHS 398. If unable to certify compliance, where applicable, provide an explanation and place it after this page.
• Human Subjects Research • Research Using Human Embryonic Stem Cells • Research on Transplantation of Human Fetal Tissue • Women and Minority Inclusion Policy • Inclusion of Children Policy • Vertebrate Animals

• Debarment and Suspension • Drug- Free Workplace *(applicable to new [Type 1] or revised [Type 1] applications only)*; • Lobbying • Non-Delinquency on Federal Debt • Research Misconduct • Civil Rights (Form HHS 441 or HHS 690); • Handicapped Individuals (Form HHS 641 or HHS 690) • Sex Discrimination (Form HHS 639-A or HHS 690) • Age Discrimination (Form HHS 680 or HHS 690); • Recombinant DNA Research, Including Human Gene Transfer Research • Financial Conflict of Interest (except Phase I SBIR/STTR) • Prohibited Research • Select Agents and Toxins
• STTR ONLY: Certification of Research Institution Participation.

3. FACILITIES AND ADMINSTRATIVE (F&A) COSTS
Indicate the applicant organization's most recent F&A cost rate established with the appropriate DHHS Regional Office, or, in the case of for-profit organizations, the rate established with the appropriate PHS Agency Cost Advisory Office.

F&A costs will ***not*** be paid on construction grants, grants to Federal organizations, grants to individuals, and conference grants. Follow any additional instructions provided for Research Career Awards, Institutional National Research Service Awards, Small Business Innovation Research/Small Business Technology Transfer Grants, foreign grants, and specialized grant applications.

☒ DHHS Agreement dated: 05/23/05 ☐ No Facilities and Administrative Costs Requested.

☐ No DHHS Agreement, but rate established with _____ Date _____

CALCULATION*

Entire proposed budget period: Amount of base $ 345,645 x Rate applied 48.50 % = F&A costs $ 167,638

Add to total direct costs from Form Page 2 and enter new total on Face Page, Item 8b.

*Check appropriate box(es):

☐ Salary and wages base ☒ Modified total direct cost base ☐ Other base *(Explain)*

☐ Off-site, other special rate, or more than one rate involved *(Explain)*

Explanation *(Attach separate sheet, if necessary.):*

Principal Investigator/Program Director (Last, First, Middle): Lovell, Mark R.

KEY PERSONNEL REPORT

Place this form at the end of the signed original copy of the application. Do not duplicate.

GRANT NUMBER
5R01HD42386-5

All Key Personnel for the Current Budget Period (do not include Other Significant Contributors)

Name	Degree(s)	SSN (last 4 digits)	Role on Project (e.g. PI, Res. Assoc.)	Date of Birth (MM/DD/YY)	Annual % Effort
Mark R. Lovell	Ph.D.	SSN	P.I.	Date of Birth	%
Michael W. Collins	Ph.D.		Co-Investigator		
James Becker	Ph.D.		Co-Investigator		
Fernando Boada	Ph.D.		Co-Investigator		
William Eddy	Ph.D.		Consultant		
Rebecca Roush	B.S.		Research Assoc.		
Denise Davis	B.S., R.T.		Research Faculty		
Jamie Pardini	Ph.D.		Project Coord.		
Katheryn Dunfee	B.A.		Research Assoc.		
Jennifer Bakal	M.A.		Consultant		

% = Percentage of Effort

For New and Competing Applications (PHS 398) – DO NOT SUBMIT UNLESS REQUESTED
For Non-competing Progress Reports (PHS 2590) – Submit only Active Support for Key Personnel

PHS 398/2590 OTHER SUPPORT

Provide active support for all key personnel. **Other Support includes all financial resources, whether Federal, non-Federal, commercial or institutional, available in direct support of an individual's research endeavors, including but not limited to research grants, cooperative agreements, contracts, and/or institutional awards.** Training awards, prizes, or gifts do not need to be included.

There is no "form page" for other support. Information on other support should be provided in the *format* shown below, using continuation pages as necessary. ***Include the principal investigator's name at the top and number consecutively with the rest of the application.*** The sample below is intended to provide guidance regarding the type and extent of information requested.
For instructions and information pertaining to the use of and policy for other support, see Other Support in the PHS 398 Part III, Policies, Assurances, Definitions, and Other Information.

Format

NAME OF INDIVIDUAL ACTIVE/PENDING		
Project Number (Principal Investigator) Source Title of Project *(or Subproject)* The major goals of this project are…	Dates of Approved/Proposed Project Annual Direct Costs	Percent Effort

LOVELL, M.R.

ACTIVE

Grant Number: CCU32335 **Funding Dates:** 09/30/03-09/29/07 **Percent Effort:** %
Total Costs: $1,940,360
Grant Agency: Centers for Disease Control and Prevention
Title of Project: Development and Validation of Measures to Assess Outcomes of Mild Traumatic Brain Injury.
PI: Gioia
Major Goals of Project: To develop and validate a measure of mTBI outcome in a pediatric population.

Grant Number: CCR 323155-01 **Funding Dates:** 10/01/03-09/31/07 **Percent Effort:** %
Total Costs: $492,250
Grant Agency: Centers for Disease Control and Prevention
Title of Project: Managing Return to Play Decisions Following Mild Traumatic Brain Injury: A Cohort Study
PI: Stevenson
Major Goals of Project: To examine the epidemiology and recovery of mTBI in Australia

Grant Number: N/A **Funding Dates:** 08/14/02-01/30/06 **Percent Effort:** %
Total Costs: $87,000
Grant Agency: Private Support
Title of Project: Private Support
PI: Collins
Major Goals of Project: To determine the incidence and outcome of concussion in high school football players wearing the Riddell Revolution helmet vs. other football helmets

Overlap: None

PHS 398/2590 OTHER SUPPORT *(continued)*

COLLINS, M.W.

ACTIVE

Grant Number: CCU32335 **Funding Dates:** 09/30/03-09/29/07 **Percent Effort:** %
Total Costs: $1,940,360
Grant Agency: Centers for Disease Control and Prevention
Title of Project: Development and Validation of Measures to Assess Outcomes of Mild Traumatic Brain Injury.
PI: Gioia
Major Goals of Project: To develop and validate a measure of mTBI outcome in a pediatric population.

Grant Number: CCR 323155-01 **Funding Dates:** 10/01/03-09/31/07 **Percent Effort:** %
Total Costs: $492,250
Grant Agency: Centers for Disease Control and Prevention
Title of Project: Managing Return to Play Decisions Following Mild Traumatic Brain Injury: A Cohort Study
PI: Stevenson
Major Goals of Project: To examine the epidemiology and recovery of mTBI in Australia

Grant Number: N/A **Funding Dates:** 08/14/02-01/30/06 **Percent Effort:** %
Total Costs: $87,000
Grant Agency: Private Support
Title of Project: Private Support
PI: Collins
Major Goals of Project: To determine the incidence and outcome of concussion in high school football players wearing the Riddell Revolution helmet vs. other football helmets

Overlap: None

Becker, James T.

ACTIVE

5 R01 AG21431-02 (Becker) **09/30/02 - 08/31/06** %
NIA $224,749
Age Moderates HIV-Related CNS Dysfunction
The purpose of this study is to compare and contrast neuropsychological deficits, including brain structural and functional abnormalities associated with HIV/AIDS as a function of chronological age.

5 R01 AG20098-03 (Lopez) **04/01/02 - 02/28/07** %
NIA $308,210
Alzheimer's Disease in Mild Cognitive Impairment
This study focuses primarily in early detection and modification of progression in AD and disability, and raises the question of whether we can improve the identification of individuals in the earliest stages of AD.

1 R01 MH64921-01A1 (Wiley) **09/05/02 - 08/31/05** %
NIH $250,000
Monocytes in HIV Encephalitis
To test the hypothesis that the radioligand 11C-PK11195 in 3D-PET will detect the presence of activated macrophages in the CNS of HIV infected subjects.

% = Percentage of Effort

PHS 398/2590 OTHER SUPPORT *(continued)*

2 U01 AI035041-12 (Becker) **05/03/04 - 04/30/09** %
NIAID $45,945
Multicenter Aids Cohort Study
The broad objective of this proposal is to maintain the epidemiological framework of the Pittsburgh component of the Multicenter AIDS Cohort Study (MACS) in order to further delineate both the natural history and pathogenesis of HIV infection in homosexual men.

PENDING

Pending Support

Pending Support

Pending Support

Pending Support

OVERLAP: None

Fernando E Boada

ACTIVE

2 RO1 NS30839-07A1 (Jones) 4/1/2001 3/31/05 %
National Institutes of Health $59,273.00
Sodium Accumulation During Ischemia
This proposal addresses the problem posed by a stroke victim who is a candidate for thrombolysis, but whose onset time is not known. A sizeable fraction of patients fall into this category, estinated in several studies to be from 20 to 45%. Using experimental stroke models and external factors, we propose to define, understand, and validate a system to estiamte the time after stroke onset.

1-R21-CA95759-01A2 (Chapman) 4/1/2004 3/31/06 %
National Institutes of Health $112,500.00
Multispectral MR Analysis of Hepatocellular Carcinoma
The purpose of this project is to use magnetic resonance imaging to develop new methodology to detect hepatocellular carcinomas at an earlier stage of development.

PHS 398/2590 OTHER SUPPORT *(continued)*

R01 MH66066-01 (Stenger) 9/1/2002 8/31/05 %
National Institutes of Health $150,000.00
fMRI Acquisitions in regions with Field Inhomogeneity
The purpose of the proposal is to develop novel methods for the mitigation of magnetic susceptibility artifacts in T2 funcitonal MR imaging. The proposal is a continuation of the exploratory R21 grant from NIMH. The primary goal is to develop a rapid fMRI data acquisiton strategy that is robust to local firld inhomogeneity in both the in-plane and through-plane directions.

1R01MH67166 01 (Stenger) 9/25/2002 8/31/06 %
National Institutes of Health $150,000.00
fMRI Acquisition Informatics Tool
The purpsoe of this R01 proposal is to develop an fMRI acquisition informatics tool for the quantitative evaluation of neuroimaging tools routinely sued in teh analysis of fMRI data. This tool will also allow an investigator to predict what effect their acquisition parameters have on their fMRI data. The project is motivated by the necessity for a metric for comparing fMRI informatics tools.

1R01 NS44818-01A1 (Boada) 4/1/2003 3/31/08 %
National Institutes of Health $226,448.00
Ischemic Brain Damage and Triple/Single Quantum Sodium MRI
The specific aim of this project is to investigate the relationship between the increase in TSC during focal cerebral ischemia, as measured by triple and single quantum filtered sodium MRI, and the development of infraction after tissue reperfusion in a non-human primate model of reversible middle cerebral artery (MCA) occlusion.

1 S10 RR019907-01 (Boada) 7/1/2004 6/30/05 %
National Institutes of Health
High Field Whole Body MRi Scanner for Multi-Nuclear MRI
Requested funding is for the purchase of a High Field Whole Body MRI Scanner to support ongoing researchthat relies on the use of proton and non-proton MRI techniques. As such techniques benefit greatly from the increased field strength and we believe that the availability of this instrument in our institution will have a significant impact on many ongoing projects.

1RO1 MH067924 01A2 (Luna) 7/1/2004 6/30/06 %
National Institutes of Health $89,837.00
Cognitive and Brain Systems Maturation through Adolescence
The broad goal of this application is to gain knowledge regarding the neurobiological basis of cognitive development from childhood to adulthood. We propose to use well-established cognitive neuroseience methods, devised to investigate the link between basic cognitive processes and brain processes.

1RO1 AG021961 01A2 (Goodpaster) 8/1/2004 6/30/08 %
National Institutes of Health $29,740.00
Skeletal Muscle Lipid and Insulin Resistance in Aging

5P50 AG005133 021 (Meltzer) 4/1/2004 3/31/05 %
National Institutes of Health $160,429.00
Alzheimer's Disease Research Center

% = Percentage of Effort

PHS 398/2590 OTHER SUPPORT *(continued)*

PENDING

Pending Support

Pending Support

Pending Support

Pending Support

Pending Support

Pending Support

Pending Support

Pending Support

Pending Support

OVERLAP: NONE

Principal Investigator/Program Director (Last, First, Middle): Lovell, Mark R.

Inclusion Enrollment Report

This report format should NOT be used for data collection from study participants.

Study Title: fMRI and Sports Related Concussion

Total Enrollment: 146 **Protocol Number:** 111

Grant Number: 5R01HD42386-5

PART A. TOTAL ENROLLMENT REPORT: Number of Subjects Enrolled to Date (Cumulative) by Ethnicity and Race

Ethnic Category	Sex/Gender			
	Females	Males	Unknown or Not Reported	Total
Hispanic or Latino	1	0	0	1 **
Not Hispanic or Latino	43	102	0	145
Unknown (individuals not reporting ethnicity)	0	0	0	0
Ethnic Category: Total of All Subjects*	44	102	0	146 *
Racial Categories				
American Indian/Alaska Native	0	0	0	0
Asian	2	0	0	2
Native Hawaiian or Other Pacific Islander	0	0	0	0
Black or African American	2	3	0	5
White	39	99	0	138
More Than One Race	1	0	0	1
Unknown or Not Reported	0	0	0	0
Racial Categories: Total of All Subjects*	44	102	0	146 *

PART B. HISPANIC ENROLLMENT REPORT: Number of Hispanics or Latinos Enrolled to Date (Cumulative)

Racial Categories	Females	Males	Unknown or Not Reported	Total
American Indian or Alaska Native	0	0	0	0
Asian	0	0	0	0
Native Hawaiian or Other Pacific Islander	0	0	0	0
Black or African American	0	0	0	0
White	0	0	0	0
More Than One Race	1	0	0	1
Unknown or Not Reported	0	0	0	0
Racial Categories: Total of Hispanics or Latinos**	1	0	0	1 **

* These totals must agree.
** These totals must agree.