2010 Education Scholar Grant Application
Julia Fielding, MD (2001)

Title: Meeting the Challenges of Radiology Resident Education in the 21st Century: Redefining the Radiology Classroom through RAD-SHARE, Radiology (See, Hear And Respond Education) – A Collaborative Pilot Endeavor

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A. Title:
Title: Meeting the Challenges of Radiology Resident Education in the 21st Century: Redefining the Radiology Classroom through RAD-SHARE, Radiology (See, Hear And Respond Education) – A Collaborative Pilot Endeavor

B. Abstract of Proposed Plan:
The aim of RAD-SHARE, (Radiology: See, Hear And Respond Education), is to create a robust, novel, and unique interactive online learning community that will serve as a network to foster knowledge sharing among training institutions for mutual benefit. The restructuring of radiology resident training, changing demands in the workplace affecting academic productivity, explosive growth of radiology, and the move towards further sub-specialization in radiology are the primary driving forces for this pilot endeavor.

The objectives of RAD-SHARE will be accomplished through the creation of lecture modules called “radactics” which will be authored by various contributors from different programs who share the vision of the project. The “radactics” will emphasize the use of adult learning principles, and the inculcation of new core competencies and standards of practice. The latest interactive learning technologies will be integrated in the portal to facilitate group and self-directed learning.

RAD-SHARE will be implemented in 2-phases through a concerted multi-institutional effort. During the pilot phase, initial learning experience of residents from participating institutions will be evaluated objectively. According to a pre-defined format, a lecture module in uroradiology, (the initial representative example) will be created and uploaded onto the portal. To assess learning among residents, standardized tests will be administered following completion of the module. Subjective feedback regarding ease of use and functionality will be obtained from module contributors and learners, respectively. The second phase will focus on systems adjustments based on the initial experience, progressive completion of the lecture curriculum, and evaluation of interactive learning features.

This RAD-SHARE initiative will be an opportunity to assess the effectiveness of a novel interactive resource for learning and the feasibility of multi-institutional sharing of educational resources for mutual benefit. The RAD-SHARE project may serve as a model to establish collaborative knowledge sharing that would potentially benefit other academic communities.

C. Resubmission Information:
No data.
A. Applicant Data:
Complete and submit the applicant personal and professional data.

<table>
<thead>
<tr>
<th>Applicant Name:</th>
<th>Julia Fielding, MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Address:</td>
<td>University of North Carolina at Chapel Hill Radiology CB 7510, Dept. of Radiology 101 Manning Drive Chapel Hill NC 27599 United States</td>
</tr>
<tr>
<td>Home Address:</td>
<td>Not Available Chapel Hill NC 27599 United States</td>
</tr>
<tr>
<td>Phone:</td>
<td>919-966-4292</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:Julia_Fielding@med.unc.edu">Julia_Fielding@med.unc.edu</a></td>
</tr>
<tr>
<td>Date of Birth:</td>
<td>04/03/1961</td>
</tr>
<tr>
<td>Institution:</td>
<td>University of North Carolina at Chapel Hill</td>
</tr>
<tr>
<td>Department:</td>
<td>Radiology</td>
</tr>
<tr>
<td>Country of Citizenship:</td>
<td>US</td>
</tr>
<tr>
<td>Residency:</td>
<td>I am a North American Citizen</td>
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<tr>
<td>Faculty Position/Rank:</td>
<td>Professor of Radiology</td>
</tr>
<tr>
<td>Grants Received:</td>
<td>Research Ongoing Research Support</td>
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None

Completed Research Support

Role: Consultant radiologist
The goal of the pelvic floor disorders network is to conduct multi-center trials using state of the art technology to determine the clinical factors leading to symptomatic pelvic floor relaxation and incontinence, identify clinical and imaging markers for patients at high risk and to evaluate the efficacy of current treatments.

MR spectroscopy of the prostate using an external array
Role: Principal Investigator
MR spectroscopy of the prostate was performed in 10 healthy
volunteers and 10 men with prostate cancer to determine the feasibility of an external array coil for detection of cancer.

NIH-R33, CA 80945-01  
Virtual cystoscopy for the detection of small bladder tumors  
Role: Principal Investigator  
Virtual cystoscopy for small bladder tumors involved the development and testing of a new virtual reality algorithm to identify small cancers by both convexity and overall bladder wall thickness with color coding of a 3D model.

Society of Uroradiology  
MR imaging of the female pelvic floor  
Role: Principal Investigator  
MR imaging of the female pelvic floor allowed me to develop MR imaging pulse sequences for open and standard closed magnets specifically designed to assess the pelvic floor of women with and without urinary incontinence.

Milton Fund, Harvard University  
Pre- and post-operative assessment of pelvic floor anatomy using 3D MRI in women with stress incontinence and pelvic floor relaxation  
Role: Principal Investigator  
Pre- and post-operative assessment of pelvic floor anatomy using 3DMRI in women with stress incontinence and pelvic floor relaxation demonstrated that MR markers could be correlated with surgical findings and clinical success.

### Peer Reviewed Articles: 59

**Selected peer-reviewed publications (in chronological order)**

**Peer-reviewed Journals (20 of 59)**

10. Deurdulian C, Mittelstaedt CA, Chong WK, Fielding JR. US of acute...
scrotal trauma: optimal technique, imaging findings, and management. Radiographics. 2007 Mar-Apr; 27(2):357-69. Review.


Book Chapters (4 of 8)


Peer-Reviewed Abstracts (3 of 10)


Percent of Time Allocated: 15% time year one and two.

B. Biosketch
See end of section
NAME
Fielding, Julia R.

POSITION TITLE
Professor of Radiology

eRA COMMONS USER NAME

EDUCATION/TRAINING  (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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</thead>
<tbody>
<tr>
<td>University of Michigan, Ann Arbor, MI</td>
<td>BS</td>
<td>1979-1983</td>
<td>Chemistry</td>
</tr>
<tr>
<td>University of Pittsburgh School of Medicine, Pittsburgh, PA</td>
<td>MD</td>
<td>1983-1987</td>
<td>Medicine</td>
</tr>
<tr>
<td>Western Pennsylvania Hospital, Pittsburgh, PA</td>
<td>Internship</td>
<td>1987-1988</td>
<td>Surgery</td>
</tr>
<tr>
<td>Boston University Medical Center, Boston MA</td>
<td>Residency</td>
<td>1988-1992</td>
<td>Radiology</td>
</tr>
<tr>
<td>Brigham and Women’s Hospital, Harvard Medical School, Boston, MA</td>
<td>Fellowship</td>
<td>1992-1993</td>
<td>Abdominal Imaging</td>
</tr>
<tr>
<td>Harvard University, School of Public Health, Boston MA</td>
<td>Fellowship</td>
<td>1999</td>
<td>Clinical Effectiveness</td>
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A. Positions and Honors

Academic Positions
1993-1998  Instructor, Radiology, Harvard Medical School, Boston, MA
1998-2001  Assistant Professor, Radiology, Harvard Medical School, Boston, MA
2001-2009  Associate Professor, Radiology, University of North Carolina at Chapel Hill, Chapel Hill, NC
2009-     Professor, Radiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

Hospital Positions
1993-1999  Associate Radiologist, Brigham and Women’s Hospital, Boston, MA
6/95-12/95  Acting Director, Uroradiology, Brigham and Women’s Hospital, Boston, MA
7/96-5/97  Assistant Director, Uroradiology, Brigham and Women’s Hospital, Boston, MA
6/1997     Director, Uroradiology, Brigham and Women’s Hospital, Boston, MA
11/99-11/00 Director, Abdominal Imaging Fellowship, Department of Radiology, Brigham and Women’s Hospital, Boston, MA
1/01-current  Director, Section of Abdominal Imaging, Department of Radiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

Other Experience and Professional Memberships
1992  Radiological Society of North America
1992  American Roentgen Ray Society
1996  Society of Uroradiology
1999  American Association of Women Radiologists
2000  Association of University Radiologists
2002  Society of Computed Body Tomography and Magnetic Resonance Imaging
2004  American College of Radiology

1995-2001 Editorial Board: Journal of Women’s Imaging

B. Selected peer-reviewed publications (in chronological order)

Peer-reviewed Journals  (20 of 59)


**Peer-Reviewed Abstracts (3 of 10)**


**C. Research**

**Ongoing Research Support**

None

**Completed Research Support**

**Pelvic floor disorders network, NIH**

Role: Consultant radiologist  
The goal of the pelvic floor disorders network is to conduct multi-center trials using state of the art technology to determine the clinical factors leading to symptomatic pelvic floor relaxation and incontinence, identify clinical and imaging markers for patients at high risk and to evaluate the efficacy of current treatments.

**Society of Uroradiology**

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MR spectroscopy of the prostate was performed in 10 healthy volunteers and 10 men with prostate cancer to determine the feasibility of an external array coil for detection of cancer.

**NIH-R33, CA 80945-01**

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Role: Principal Investigator

Pre- and post-operative assessment of pelvic floor anatomy using 3D MRI in women with stress incontinence and pelvic floor relaxation demonstrated that MR markers could be correlated with surgical findings and clinical success.
C. Priority Statement:

I have spent my entire working life at academic hospitals working with mentors and colleagues of the highest caliber. As identified in my biosketch, I have received university, society (RSNA and SUR) and NIH funding. My research experience has been exhilarating, but the most important part of my job has been teaching. I received the teacher of the year award for the Department of Radiology on 4 separate occasions. There is nothing more valuable to our field than instructing trainees in logical thinking and compassionate care. Therefore I was delighted when my current fellow and trainees suggested that I apply for the Research Scholar grant. My goals for the project are two-fold: 1) produce a free online site of uniform lecture content geared towards individual levels of training and the core competencies required for the third year comprehensive board test, and 2) to bring private practice doctors back into the fold of teachers. Storing and vetting lecture content at the University of North Carolina is ideal as there is an excellent center for Internet Learning available to our group. Of course, even a very large single academic department cannot produce all of the required content or review. For this reason, we have consulted with several nationally known educators to help us find quality lecturers. I am very excited to propose a national education initiative – available to all training programs at no cost. It is my hope that should this grant be funded, the material would eventually be placed on the myRSNA website.

D. Other Investigators:

Name: Alfred Llave, MD: Fellow in Abdominal Imaging, University of North Carolina Hospitals.

Role: Former Chief Resident, University of Florida-Jacksonville, Department of Radiology. Presenter, Special Session on Informatics moderated by Dr. Kimberly Applegate (2008 RSNA), "Use of Informatics To Improve Radiology Education". University of Florida Society of Teaching Scholars Outstanding Resident Educator Award 2009. Electronic Communications Committee Member, Association of University Radiologists. Dr. Llave will pursue private practice but will continue active involvement in the RAD-SHARE project by inviting academically-inclined private practice radiologists to contribute learning content, increasing involvement of this sector in academic radiology.

Name: Megan Bell, MPM, Production and Project Manager for ITS Teaching and Learning Interactive at the University of North Carolina at Chapel Hill

Role: Ms. Bell manages instructional multimedia projects that incorporate technology to enhance the learning experience of UNC-Chapel Hill students. With fifteen years experience in managing creative and communication teams, she ensures that ITS-TLI projects use standard management and development processes which are also visually appealing. Ms. Bell holds a Radio, TV, and Motion Pictures BA from UNC-Chapel Hill and a Project Management MA from Western Carolina University. Her published work includes articles about Project Management of Creative Projects, Project Management and processes for a large scale education animation product, and a HD video production case study. For the proposed RAD-SHARE project, Ms. Bell will serve as the ITS-TLI Project Manager and Client Liaison managing instructional technology resources and keeping the PI updated on progress.

Name: Hongtu Zhu, PhD: Associate Professor of Biostatistics at the University of North Carolina at Chapel Hill

Role: Dr. Zhu is an expert in biostatistics and neuroimaging analysis. He is an experienced researcher and has collaborated extensively with medical investigators. Dr. Zhu will oversee all research aspects of the RAD-SHARE project including data management, question design, statistical analyses, and the reporting of results. All statistical procedures will be primarily performed in SAS v.9.1 (SAS Institute Inc., Cary NC). Before undertaking statistical modeling, he will perform descriptive analyses (e.g., normal probability plots, Q-Q plots, and kernel density plots) and examine the distributions of the measurements of each learning tool. Appropriate transformations or nonparametric statistical tests will be considered for comparing different learning tools, if necessary.

Name: Michael Federle, MD, FACR: Professor of Radiology and Associate Chair for Education, Stanford University Department of Radiology

Role: Dr. Federle is a world-renowned expert in abdominal imaging, particularly bowel and liver, and has had a long academic career in clinical work, teaching and administration. Previously Chairman of the University of Pittsburgh Department of Radiology, he is now Associate Chair for Education at Stanford University Department of Radiology. Dr. Federle is a prolific writer and lecturer, and has received numerous awards for excellence in teaching and research. His role will be to provide content for the abdominal imaging modules.

Name: Gautham Reddy, MD, MPH, Professor of Radiology, Vice Chair for Education, Director of Thoracic Imaging, University of Washington Department of Radiology

Role: A specialist in cardiothoracic imaging and an experienced lecturer, author and researcher, Dr. Reddy has had leadership roles in radiology education. He is a past residency program director. He currently serves as president of the Alliance of Clinician-Educators in Radiology and works with radiology residents across the nation in his capacity as senior faculty adviser for the American Alliance of Academic Chief Residents in Radiology. He will serve as a consultant for the project and contributor of learning module content.

Name: Beverly Wood, MD, MSEd, PhD, Professor of Radiology and Pediatrics, Faculty, Master of Academic Medicine Program, Keck School of Medicine, University of Southern California

Role: Prefers to be known as "Dr. Wood".
Role: She is an expert in pediatric radiology, who is renown for her strong interest in adult teaching strategies and E-learning. Dr. Wood has research experience in the development of expertise and methods to use advanced cognition in medical education. She also has extensive experience in the development and design of interactive learning materials and the effective use of feedback for learners using electronic materials, including design of programs in formative feedback and summative assessment. Her contributions would be invaluable for the creation of a robust, interactive learning platform, one of the main goals envisioned by the RAD-SHARE project.

Name: Angelisa Paladin, MD, Assistant Professor of Radiology, Program Director, University of Washington Department of Radiology

Role: Dr. Paladin is a specialist in pediatric radiology and has extensive experience working with residents in a large program setting as program director at University of Washington. She is the faculty advisor for the American Alliance of Academic Chief Residents in Radiology which will enable her to serve as an effective liaison with radiology residents on a larger scale which will help facilitate the recruitment of "resident choice" lecturers for the RAD-SHARE project proposal. Dr. Paladin will serve as a consultant-contributor for the project.

Name: Arun Krishnaraj, MD, MPH: Resident, University of North Carolina Hospitals. Incoming Fellow Abdominal Imaging and Informatics, Massachusetts General Hospital (2010-2012).

Role: Incoming Fellow Abdominal Imaging and Informatics, Massachusetts General Hospital (2010-2012). Former Chief Resident, University of North Carolina Hospitals, Department of Radiology. American College of Radiology Resident and Fellows Section Executive Committee - Chair-Elect (2010). UNC Department of Radiology and Biomedical Research Imaging Center Research Symposium - Research Award Winner (2008). Dr. Krishnaraj has experience in webdesign having co-Designed ACR Resident and Fellow Section (RFS) website and RFS Educational Portals. He also served as the senior web designer of www.pihousing.org (2000-2005) and designed the current website and intranet site for UNC Department of Radiology. Together with Dr. Choy, he will design the user interface and functionality of the RAD-SHARE online portal.

Name: Garry Choy, MD, MSc: Resident, Massachusetts General Hospital. Incoming Abdominal Imaging Fellow, Massachusetts General Hospital.

Role: Incoming Abdominal Imaging Fellow, Massachusetts General Hospital. CIO at RadRounds Radiology Network and Co-Founder of International Radiology Exchange International Radiology Exchange (iRadX.org). Via iRadX, Dr. Choy developed numerous electronic radiology teaching modules distributed to developing nations for training in diagnostic interpretation of imaging of HIV/tuberculosis-related pathologies. He is a multiple RSNA Awardee for research, and has funded grant experience with the RSNA (completed project). Together with Dr. Krishnaraj, Dr. Choy will design the user interface and functionality of the RAD-SHARE online portal.

Name: Mark Neely, MD: Resident, University of North Carolina Hospitals. Incoming Fellow Combined Breast and Abdominal Imaging, UNC (2011-2012).

Role: An upper level Radiology resident and future Abdominal/Breast Imaging fellow with a strong background and interest in education. Dr. Neely has worked as an instructional assistant in the General Chemistry undergraduate computer laboratory at the University of Georgia, providing technical assistance for computer-based learning modules. He also organized Kids in Science programs to promote elementary science education for underprivileged grade school students while at the University of Georgia and at Duke University Medical School. Dr. Neely currently assists with medical student education by leading didactic and case-based lectures as a radiology resident. As a resident and fellow Dr. Neely has a strong understanding of the challenges facing resident learners and knowledge of the technical aspects required to make this project successful.

Name: Kimberly Applegate, MD, MS, FACR: Professor of Radiology, Vice Chair of Quality and Safety, Emory University

Role: An expert in pediatric radiology, she has extensive leadership experience with national organizations including AUR and ACR and is involved in many projects with an emphasis on safety, public policy, research, and education. Her many contributions to academic medicine include multiple publications and dedication to teaching and mentorship of many pre- and post-doctoral trainees. She will advise on question design, website interactivity and provide specific advice and training to the project. Dr. Applegate will advise on the creation of educational materials and the effective use of feedback for learners using electronic materials.

Name: Jocelyn Chertoff, MD, FACR: Professor of Radiology, Vice Chair, Dartmouth Hitchcock School of Medicine, Department of Radiology

Role: An expert in abdominal imaging, and obstetrics and gynecological imaging, she has extensive leadership positions in the ABR, ACR, AUR, APDR, ACER, and AAMC. Her leadership and involvement in radiology education includes Board of Director membership in the APDR, and membership in Residency Restructuring, Long Range Planning and Competency Resource Development Committees. She is serving as Co-Vice Chair of the ACR Commission on Education, and is member of the ACR Steering committee for the Development of Learning Resources in Appropriate Imaging Utilization. Dr. Chertoff is a reviewer and case-based lecturer for the RAD-SHARE project proposal. Dr. Chertoff will serve as a consultant-contributor for the project.

Name: Lori Deitte, MD, FACR: Clinical Associate Professor of Radiology, Residency Program Director, University of Florida-Gainesville
Role: She has extensive involvement in residency program directorship, having been involved in program directorship for both small and large training programs. She is an active leader in residency education serving as a member of the APDR Radiology Residency Restructuring Committee and RSNA Education Committee. Dr. Deitte will advise on curriculum content, especially in relation to core competencies for the comprehensive ABR exam. She will also serve as a liaison at a large program testing site in addition to providing lecture material.

Name: Barry McCook, MD: Associate Professor of Radiology, Residency Program Director, University of Florida-Jacksonville

Role: A leader in the development of PET-CT who has served as a former Chair at Shady Brook, University of Pittsburgh Department of Radiology. He will advise on curriculum content, especially in relation to core competencies relating to radiation safety. Dr. McCook will also contribute lectures in PET CT and nuclear medicine topics.

Name: Kimberly Eke, PhD: Senior Manager for Teaching and Learning Interactive, a division of ITS Teaching and Learning at the University of North Carolina at Chapel Hill.

Role: Dr. Eke will oversee two primary and interrelated services: the digital delivery of instructional materials and the development of interactive educational content. Prior to joining ITS Teaching and Learning, Dr. Eke developed online courses at Penn State's World Campus and Michigan State's Virtual University. She has a Ph.D. in Resource Development from Michigan State University, a Master's degree in Environmental Studies from Baylor University, and a BA in Environmental Studies/Sociology from St. Lawrence University. For the proposed RAD-SHARE project, Dr. Eke will focus on curricular mapping activities and inventories to support the instructional design efforts to better ensure the quality of the entire product (both technology and content). She will also be part of the efforts to select, modify, develop and test the technology solutions used to create RAD-SHARE.
A. Detailed Education Program:

The description of the program should be thorough but focused. Not to exceed 5 pages. Use 0.5 inch margins and size 11 Arial font. If necessary, additional pages may be included for the bibliography.

Introduction:

- Rationale and Purpose: General statement of purpose. Describe why the project should be undertaken. For research projects, state theory and a brief literature review.
- Objectives: Specific statements of intended outcomes or expected results. Research hypotheses are appropriate for research studies.
- Student Population: What learner group(s) will be served by the project?

Previous Experience: Relevant preliminary work/prior experience of investigator.

Project Plans:

- Activities: What specifically will be done to achieve the above objectives? How? Where? etc.
- Time Schedule: To whatever extent possible, present a schedule of dates when various aspects of the project will be completed.
- Outcomes: What types of new knowledge, educational programs or materials will be developed through this project?

Evaluation:

- How will the outcomes of the project be assessed in terms of the purpose and objectives?

B. Research Assurances:

Will the project involve any of the following?

- human subjects (Y/N)
- vertebrate animals (Y/N)
- ionizing radiation/radioactive isotopes (Y/N)
- other, requiring institutional research assurance approval (recombinant DNA, etc) (Y/N)

Funded applicants will be required to submit appropriate forms before grant funds are released.

C. Resources and Environment:

Describe major equipment, laboratory, clinical, animal, office/computer, support services, education resources, and other facilities (simulation centers, survey cores, etc) that will be available for this project.

A. Detailed Education Program:

See end of section.

B. Research Assurances:

Human Subjects: No
Vertebrate Animals: No
Ionizing Radiation: No
Radioactive Isotopes: No
Other: (recombinant DNA research.) No

C. Resources and Environment:

- University of North Carolina- Chapel Hill ITS Teaching and Learning Laboratories: The UNC Vice Chancellor for Teaching and Learning, Dr. Charles “Charlie” Green has fully endorsed this project. This facility has an experienced staff of 15 individuals. For the RAD-SHARE project, ITS-TLI will organize a core team with team roles of: Project Manager, Instructional Design Lead/Content QA, Curriculum Mapping Coordinator, Technical Lead, and Art Director / Design QA. The team will have a cross-platform environment with both PC and Mac workstations. The team will use industry standard media development software, including Adobe’s Illustrator, In Design, Photoshop, Flash, and Dreamweaver. For programming, main tools include PHP and MySQL on Apache along with HTML and XML.
- University of North Carolina Hospitals -Chapel Hill, Department of Radiology: Dr. Matthew Mauro, Department Chairman has provided full endorsement of this project. Residents will participate in the pilot project where the effectiveness of the interactive learning modules will be assessed. Faculty will contribute lectures and assist with developing curriculum.
- Emory University, Department of Radiology: Vice Chair for Quality and Safety Dr. Kimberly Applegate has given full support and is a consultant for the RAD-SHARE project. Residents will participate in the pilot project where the
effectiveness of the interactive learning modules will be assessed. Faculty will contribute lectures and assist with developing curriculum.

• University of Florida-Jacksonville, Department of Radiology: Department Chairman Dr. Richard White and Program Director Dr. Barry McCook have given full support for the project. Dr. McCook is a consultant for RAD-SHARE. Residents will participate in the pilot project where the effectiveness of the interactive learning modules will be assessed. Faculty will contribute lectures and assist with developing curriculum.

• University of Florida-Gainesville, Department of Radiology: Department Chairman Dr. Anthony Mancuso and Program Director Dr. Lori Deitte have given full support for the project. Dr. Deitte is a consultant for RAD-SHARE. Residents will participate in the pilot project where the effectiveness of the interactive learning modules will be assessed. Faculty will contribute lectures and assist with developing curriculum.

• Dartmouth Hitchcock School of Medicine Department of Radiology: Department Chairman Dr. Peter K. Spiegel has given unequivocal support for the project. Department Vice Chair Dr. Jocelyn Chertoff is a project consultant. Residents will participate in the pilot project where the effectiveness of the interactive learning modules will be assessed. Faculty will contribute lectures and assist with developing curriculum.
Rationale and Purpose:

Increasing demands in the workplace with the primary emphasis on productivity are affecting the quality of radiology education (1,2,3,4,5). Recent A3CR2 surveys report that an overwhelming majority of respondents (86%) felt that education was suffering due to increasing workload, and that their existing curriculum is not dynamic enough to meet the requirements for the changing skills required in practice(6,7). Over the recent years, there has been interest in the creation of more structured curricula to reflect ACR and APDR guidelines. The recommendation of the 2000 A3CR2 Problem Solving Session in response to the perception of a decline in radiology education was to have programs comply with more specific educational guidelines set by the APDR (7). With the new ABR format, some educators suggest “major restructuring of the entire radiology residency curriculum”, adding that format changes will have a potentially greater impact on smaller community-based programs with limited educational resources (8). Further, the emphasis on subspecialty training will pose an added challenge to all training programs (9), and will particularly affect smaller training programs that may lack subspecialized radiologists (8).

A proposed solution outlined to meet the challenges of graduate medical education in the setting of increasing service requirements is the development of a more formal and clearly defined curriculum (10). Advancing radiology education beyond a simple topic list curriculum into one that would promote life-long learning skills and non-interpretative skills is a major goal (11). Various initiatives have been proposed to enrich the traditional curriculum including collaboration between the ACR and APDR to teach non-interpretative skills to radiology residents (12). In 2002, the APDR developed radiology training descriptions for the 6 core competencies introduced by the Accreditation Council for Graduate Medical Education (ACGME) (13). The following year, the Society of Thoracic Radiology Education Committee created a curriculum that reflected changes in the ACGME competencies which also emphasized understanding of ACR guidelines for practice (14). More recently, an integrated and graduated curriculum in abdominal radiology was developed, tailored to early, mid-level and advanced-level rotations (15). To increase awareness and the use of ACR Appropriateness Criteria ©, a grant was proposed to support decentralized educational innovations that would help meet this goal (16). With the rapidly expanding body of knowledge in radiology fueled by advances in technology and emerging treatments, the academic community is challenged to create a curriculum that cannot only instruct on subspecialty knowledge, but also inculcate non-interpretative skills in an effort to secure our future (17).

Finally, there are inherent limitations to the traditional daily conference and existing lecture set-up. The daily lecture format has been compared to an “old rural village school” model, where learners at different levels of training receive the same lecture (1). To be more effective, the lecture should be appropriate for the level of experience of the learner (1,18). Equally important is the timing of learning opportunities. Didactic lectures have potentially more significant learning impact when concurrent with the resident’s rotational assignment, thus the current daily noon conference set-up does not promote learner-centered education. Although electronic lecture resources are available, they are limited in number and are often cost-prohibitive. Most open sources are offered through different websites requiring separate “sign-ons”, with content mainly geared toward the practicing radiologist and often lack the use of adult learning principles. An ideal lecture resource should not simply be a repetition of information already available elsewhere, but be one that would promote critical thinking (19). Traditional lectures are thought to be ineffective in improving outcomes on patient care necessitating innovations that are interactive, self-directed and promote just in time learning (20). Finally, existing online lecture resources lack interactivity between teacher and learner, and among co-learners. Through the
use of the latest online learning tools and purpose-driven multi-institutional collaboration, interactivity can be an attainable goal (2,21,22).

**Objective:** The aim of this proposal is to create RAD-SHARE, (Radiology: See, Hear And Respond Education), a robust, novel and unique interactive online learning community which will serve as a network to foster knowledge sharing among training institutions for mutual benefit. Lecture modules called “radactics,” authored by various contributors from different programs who share the vision of the project, will be created to meet the goals of the project. The “radactics” will emphasize the use of adult learning principles, and the inculcation of new core competencies and standards of practice (Fig.1). The latest interactive learning technologies will also be integrated in the portal to facilitate group and self-directed learning (Fig.2). RAD-SHARE will be implemented in 2-phases through a concerted multi-institutional effort. Using standardized tests, learning among residents will be objectively evaluated with and without the use of the portal. Subjective feedback regarding ease of use and functionality will be obtained from module contributors and learners respectively. We hypothesize that our online portal will enhance learning among resident users and that these modules will be an effective resource for collaborative creation and sharing of educational resources for mutual benefit.

**Student population:** Residents in radiology training programs across the United States will be served by this project. The first phase will include residents from a select group of residency programs: Large program (Emory University and University of Florida-Gainesville), Medium-sized program (University of North Carolina Hospitals), Small program (University of Florida-Jacksonville and Dartmouth-Hitchcock School of Medicine). The second phase will make the portal open to residents of all radiology training programs.

**Previous Experience:** The Primary Investigator, Dr. Julia Fielding, is an expert in Uroradiology and Gynecologic Imaging and a recognized leader in radiology education. She will be able to draw upon her extensive contacts in the Society of Computed Tomography, MRI and Society of Uroradiology/Gastrointestinal Radiology and American Association of Women Radiologists to acquire “radactics” for the project. She has been the director of the ARRS course in oncology, fellowship director at Brigham and Women’s Hospital and has participated as a guest lecturer nationally and internationally. Dr. Fielding is the director of several teaching courses both nationally and internationally. She will lead a dedicated team of radiology faculty and residents who are unified in undertaking this innovative mission to promote radiology education through collaboration.

Our investigators represent a diverse spectrum of individuals from various sized programs, across the nation representing both faculty and resident perspectives (Fig.3). Faculty team members include leaders in academic radiology with committee appointments in the RSNA, APDR, AUR and ACR. Resident and fellow team members have extensive experience in web-based education and design and most served as chief residents in both small and large programs. All share a common passion for the advancement of resident education.

**Project plans:**

1. **To develop an enhanced lecture curriculum through collaboration.** The RAD-SHARE project would feature both central and decentralized approaches: centralized by virtue of the having the RSNA become the sponsoring organization, and decentralized through leveraging of radiology expertise at the grassroots level with volunteer educators contributing educational content. The project will help increase involvement of smaller programs as well as academically-inclined private practice individuals, and will be an endeavor where the
contributions of all involved are equally important, and mutually beneficial. As a synergistic effort, the end product of this collaborative venture will hopefully result in what Gunderman and Chan describe as “a dynamic community that thrives on the sharing of knowledge” (22).

The lecture curriculum will include overview and disease-specific topics organized into the 11 major sections of the new ABR Boards. In addition, topics in non-interpretative skills such as professionalism, practice-based learning, and research will also be covered. The lecture modules (Radactics) will be composed of: 1. Recorded lecture, 2. Five key learning points, 3. At least 3 recommended reading hyperlinks, and 4. Five pre- and post-lecture questions. We believe the combination of learning material and self-assessment are important factors for the development of a successful curriculum (23,24).

The learning objectives will provide the framework for creating the lectures and provide a metric to measure during the assessment phase (25). Content will be developed to inculcate ABR competencies including concepts in anatomy, pathophysiology, interpretation of findings, and management as well as ACGME core competencies. ACR practice guidelines and appropriateness criteria will also be integrated into the content. As opposed to the traditional daily conference where learners at different levels of training receive the same lecture, the modules will be tailored and classified to the appropriate level of training to provide logical step-wise learning. Lecturers will also be encouraged to employ elements of adult learning such as real time questioning to stimulate critical thinking as well as problem-based learning (26,27). At the onset, the basic framework of the curriculum will be developed; however, the RAD-SHARE lecture curriculum will continue to be a responsive and “continuously enhancing” portal, allowing more diverse topics to be added according to emerging educational needs (28).

2. To create the RAD-SHARE (Radiology: See, Hear, And Respond Education) online portal.

The RAD-SHARE portal will be a multimedia online educational community designed to promote learner-centered education including interactive features to facilitate collaborative learning. It will require individualized sign-in for access that will allow for a personalized learning plan. The entire curriculum will be laid out as a “virtual road map” and the lecture modules may be bookmarked to monitor progress. Short-term learning goals can also be created by the learner as part of a “virtual worklist.” Personalized notes can be made for each lecture module which can be saved, retrieved and printed. Content will be indexed according to keywords making lectures searchable within the website, a feature which is crucial for “just in time” learning. We believe electronic resource should not be created to serve only as a convenient repository of information, but to become a venue for interactive knowledge sharing (29). Collaborative and interactive learning features (“Respond”) will be built-in allowing for the creation of study groups composed of residents from different programs on similar rotations. These groups will be able to view lectures at the same time and engage in active discussion after the lecture with enabled chat. Learners can also use the chat function as a “poor man’s audience response” to questions that are posted during the lectures (30,31). A “Collaborad” tool will allow for creation of discussion/interests groups with real time chat to promote interactive learning or discussion based on common interests (32,33). Information from viewer history and learner preferences can be used to invite learners to join moderated lectures where the lecturer may answer questions (submitted by chat) at the end of the lecture using audiovisual conferencing tools. Audiovisual conferencing can also be used to host periodic live case conferences, live lectures and virtual “hot seats”. Discussion threads will also be made for each module.

The RAD-SHARE portal will be created on a robust and versatile online learning platform that will allow for seamless uploading of lectures using latest captureware software, an established
method (34,35). Additional learning content of the Radactic may be uploaded using online templates.

**Specific activities with Time Schedule:**

**Pre-phase 1 (Preliminary work):**
At the time of submission, the participating institutions have obtained letters of support from their respective department chairs. The UNC-ITS Teaching and Learning Department lead by Dr. Kimberly Eke has already begun preliminary work on creating mock-ups for the website appearance as well design of the user interfaces for the portal features (Figure 4). We have assembled a group of radiology educators who share the vision and purpose of the RAD-SHARE project and who have already committed to serve as curriculum consultants and content contributors. A sample “radactic module” is currently being developed with content reflecting new core competencies of the APDR/ABR and practice standards of the ACR, using adult learning strategies. We hope that this can serve as a model for the creation of additional modules.

**Phase 1 (Pilot phase):**
1. Implementation of the online portal for knowledge sharing. The UNC ITS Teaching and Learning department is assigned to the task of developing the robust online learning platform that will allow for easy creation and submission of content, as well as personalized and interactive access. (Goal is to have online portal open for content submission by November 2010)
2. Development of guide for creating content based on ABR/APDR core competencies and ACR practice guidelines (Ongoing at present, target completion by November 2010)
3. Development of guide for creating content based on adult learning principles (ongoing at present, target completion by November 2010)
4. Development of limited online lecture curriculum and lecture module for the pilot phase on GU radiology. (Ongoing at present, target completion by January 2011)
5. Development of limited online lecture curriculum and lecture modules for the pilot phase consisting total of 50 lectures covering GI, GU, Pediatric radiology and Nuclear medicine. (Ongoing at present, target completion by January 2011)
6. Open portal for use of residents in pilot institutions (February 2011)
7. Objective measurement of effectiveness of learning using RAD-SHARE (March 2011)
8. Obtain feedback on the functionality of the online portal from users and authors “initial experience” (March 2011)

**Phase 2 (Year 2):**
1. Defining a comprehensive lecture curriculum (Ongoing at present, finalize by August 2011)
2. Making recommended changes obtained from feedback obtained from Phase 1 experience (July 2011)
3. Authoring and submission of lecture modules (Ongoing from phase 1, to be complete by January 2012)
4. Open to all programs for use (July 2011)
5. Obtain feedback on the functionality of the online portal for continuous improvement (Continuous)
6. Implement improvements (Continuous)

**Evaluation:**
Objective measures for evaluating learning with the new portal will be obtained during the pilot phase as an evidence-based approach for using feedback to improve the curriculum content.
Specifically, 100 residents from the 5 participating radiology residency programs will be asked to study a specific topic, kidney disease, for a predetermined time. Residents will be randomized so that 50 residents will be free to choose their study method of choice and the other 50 will view lecture module using RAD-SHARE technology. A 15 question test comprised of questions culled from several years of in-service exams and unknown to the RAD-SHARE lecturer will be administered online to the participating residents. Scores will be tabulated and results compared between the two groups to determine whether the RAD-SHARE system yields superior results. Subjective measures to assess ease of creating learning content and ease of use of the online portal will also be obtained from the educators and learners respectively. For resident learners, post lecture surveys will assess utility of the lecture, overall satisfaction and ease-of-use of the application, as well as potential for continued use. During the second year, additional subjective and objective measures will be obtained to assess the usefulness and effectiveness of interactive learning features. For educators, surveys will be designed to assess lecturer satisfaction with the screen capture software, ease of lecture uploading and distribution, and the potential for continued participation in the project.

All statistical procedures will be primarily performed in SAS v.9.1 (SAS Institute Inc., Cary NC) and SEQ. Before undertaking statistical modeling, we will perform descriptive analyses (e.g., normal probability plots, Q-Q plots, and kernel density plots) and examine the distributions of the measurements of each learning tool. Appropriate transformations or nonparametric statistical tests will be considered for comparing different learning tools if necessary. To statistically compare the scores from two groups of residents, we will carry out three levels of analyses. In the first level, we will use both parametric and nonparametric methods including two-sample t test and wilcoxon rank test to compare the overall scores from these two groups. In the second level, we will use multivariate regression models to analyze the scores obtained from multiple sessions in order to detect group differences in each session. In the third level, we will use latent variables models to analyze the scores from all questions in each session (or all sessions) to compare two groups.

**Outcomes:**

1. RAD-SHARE educational portal will be fully operational and available for free use to all residents in US programs by July 2011. Residents will be able to complete lecture modules according to his or her short-term “virtual worklist” with long-term guidance from the “virtual roadmap” integral for self-directed learning.
2. Interactive features such as chat and audiovisual conferencing will enhance group learning. The use of “Collaborad” (moderated scheduled chat) will be useful for radiology learners to engage in meaningful discussions and facilitate further collaborative ventures to benefit from group learning (36,37,38).
3. Radiologists from both large and small, academic and community-based programs will have greater involvement in organized academic radiology. Top educators in radiology will have more far-reaching influence and impact through RAD-SHARE.
4. Private practice radiologists who have an interest to teach will discover RAD-SHARE as a venue to enable them to make contributions to academic radiology (39).
Bibliography:

33. Gunderman RB. Walls and Bridges. JACR Volume 4, Issue 1, 71-72.
Appendix:

Figure 1. Radactic module content. Modules will be enriched with content relevant to resident learning objectives.

Figure 2. RAD-SHARE learning portal features. Portal will be designed for ease of use for the contributing radiology educator, and for facilitation of both self-directed and interactive group learning for the resident learner.
Figure 3. RAD-SHARE core group of collaborating institutions. The growing group of collaborators includes radiology departments from the University of Washington, Stanford University, University of Southern California, Emory University, Dartmouth-Hitchcock School of Medicine, University of North Carolina Hospitals and University of Florida - Gainesville and Jacksonville.
Figure 4. RAD-SHARE screenshots (initial design). Interface will be resident-designed in collaboration with highly-experienced instructional designers using the latest robust learning platforms.
### A. Detailed Budget:

Provide a complete budget for the proposed project, including, where applicable, information on equipment that will be purchased or rented, supplies and materials, other (including salary support and benefits if a laboratory or other assistant will be paid by this grant). All direct costs and equipment costs should be included, with justification for each item. Explain how costs not covered by this grant will be paid (departmental funds, etc). The RSNA Research & Education Foundation does not pay institutional overhead costs or indirect costs. Travel expenses for the RSNA Scientific Assembly and Annual Meeting may not be paid for by this grant.

### B. Other Sources of Support (pending and received):

List all other sources of support applied for or received for the research project. Include the applicant's name, the amount, and the date of receipt. Their contributions must be clearly indicated as in-kind, restricted or unrestricted support. Indicate the compatibility of such additional sources of support with the eligibility criteria and terms. (Acceptance of an award from another source for the same project is prohibited unless one source provides only salary support and the other source provides support only for non-personnel direct costs.)

### C. Award Payment Information:

To facilitate fund disbursement if the grant is approved, please supply the payee information and mailing address - this information is available through the institution's research administration office. The institution will serve as the fiscal agent.

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### A. Detailed Budget:

Budget – year 1:
- Salaries of the PI and majority of co-investigators
  will be paid by their academic departments $0
- All consultants will be paid by their academic departments $0
- Co-investigators, Drs. Krishnaraj and Choy @$2000
- for website design and continuing evaluation $4,000
- Supplies- Microphones/cables/thumb drives $3,000
- UNC-ITS Teaching and Learning Interactive Department $40,175
- Content acquisition, 50 lectures @$200 $10,000
- Resident testing, 100 residents @$50 $5,000
- Statistical analysis $5,000

Total: $67,175

It is expected that in year 2, increased costs for statistical analysis, additional content acquisition and 20% fellow time will require approximately $75,000 in funds.

### B. Other Sources of Support:

None

### C. Award Payment Information:

Grant checks payable to: UNC-CH

Grant checks sent to: Attn: Vanessa Peoples
The University of North Carolina at Chapel Hill
Office of Sponsored Research
104 Airport Dr., Suite 2200, CB#1350
Chapel Hill, NC 27599

9199624676
readminor@unc.edu
A. Signatures
Enter the names and contact information for each individual that will sign the completed, printed application. Original signatures are required on the printed copy. Electronic productions will not be accepted.

I/We affirm that arrangements for the outlined program have been made and that the funds and support services described are available. The terms and conditions as stated in the Policies and Procedures section of this application form are acceptable according to the policies of the host institution and they can and will be honored. In submitting this proposal and signing below, the principal investigator and the sponsoring department agree to carry out the activities described in this proposal within the time specified. The applicants assure that the moneys will be spent in the manner prescribed. The application form has been completed to the specifications required by the RSNA Research & Education Foundation. I/We recommend the applicant as an RSNA Education Scholar Grant recipient.

Scientific Advisor: No data.

Department Chair
Dr. Matthew Mauro
C.B. 7510, Dept. of Radiology
University of N. Carolina at Chapel Hill
Chapel Hill, NC 27599
919-966-4238  m_mauro@med.unc.edu

Signature: ___________________________________________  Date: ______/_____/_____

Grant Administrator
Dr. Tony Waldrop, Vice Chancellor for Research and Economics, Professor
Office of Sponsored Research
104 Airport Dr., Suite 2200, CB 1350
University of North Carolina at Chapel Hill
Chapel Hill, NC 27514
919-962-1319  resadminosr@unc.edu

Signature: ___________________________________________  Date: ______/_____/_____

Grant Applicant  Julia Fielding, MD
Office Address
University of North Carolina CB 7510, Dept. of Radiology
101 Manning Drive
Chapel Hill NC 27599
Phone: 919- 966-4292
Email: Julia_Fielding@med.unc.edu

I affirm that the information submitted in this application is accurate and true. If awarded an RSNA Education Scholar Grant, I agree to abide by the terms and conditions as stated in the Policies and Procedures section of this application form.

Signature: ___________________________________________  Date: ______/_____/_____

Julia Fielding MD
A. Letters of Agreement (if applicable)
If equipment or supplies for the proposed study will be provided by a source other than the applicant's department (such as a commercial company), include a letter of intent/agreement from that source. Similarly, if the study involves significant collaboration with other individuals, include appropriate letters of agreement.
Support Letters from Collaborating Institutions:

1. From Dr. Michael Federle, Associate Chair for Education, Stanford University, Department of Radiology:

Dear Albert,

I would be happy to share my ideas and whatever resources are at my disposal to help you achieve your goal. Say “hey” to Barry and Julia for me.

Michael P. Federle, M.D.
Professor and Associate Chair for Education:
Department of Radiology
Stanford University Medical Center
federle@stanford.edu
(650) 721-6411 or 6410 (phone)
(650) 725-7296 (fax)
2. From Dr. Richard White, Chairman, and Dr. Barry McCook, Program Director, University of Florida-Jacksonville, Department of Radiology:

I am happy to endorse this interesting proposal

Richard D. White, M.D., FACC, FAHA, FSCCT
Professor & Chairman
Department of Radiology
University of Florida College of Medicine-Jacksonville
655 West 8th Street
Jacksonville, FL 32209

From: McCook, Barry M.
Sent: Monday, January 04, 2010 5:48 PM
To: White, Richard (Radiology)
Subject: FW: RSNA grant application

Rick

This is a continuation of a project that Alfred Llave and some of the faculty and residents were working on last year that was presented at the RSNA. He is continuing his work at UNC and is applying for grant support. I have agreed to be a consultant and represent a “small” program for his testing of the effectiveness. He discussed with Mike Federle and he seemed very supportive of the idea and Drs Mancusa and Lori Deitte have also signed on as an endorser and consultant respectively. Alfred would like to know if you would endorse the project so he can add strength to the proposal. Please look over the proposal if you don’t mind. Thanks

Barry

Office: (904) 244-4888
3. From Dr. Kimberly Applegate, Vice Chair of Quality and Safety, Emory University, Department of Radiology:

Wed, Dec 9, 2009 at 5:32 PM

subject RE: rsna grant app
mailed-by emoryhealthcare.org

I have been impressed with Alfred's work to make this happen for the past year and will continue to support him on this. I look forward to doing this with you. Thanks!

Kimberly E. Applegate, MD, MS, FACR
Professor of Radiology
Vice Chair of Quality and Safety
Department of Radiology
Emory University School of Medicine
1364 Clifton Road, NE, Suite D112
Atlanta, GA 30322

office phone: 404-712-4882
fax: 404-712-7387
email: keapple@emory.edu
mobile 404-276-3446

Hi Kimberly

As you know, I am working with Alfred Llave on an RSNA education grant. I gave all of the residents/fellows a pep talk last week and he did this on his own. We have had 2 brainstorming sessions and I have helped him with timelines, budgets, abstract and setting up analysis.

Alfred will send you a current draft now.
Let's hope this works out. It would be nice to work on a project with you.

Julia

---

Julia R. Fielding, M.D.
From Dr. Anthony Mancuso, Chairman, University of Florida-Gainesville, Department of Radiology:

From: "Anthony Mancuso" <mancua@radiology.ufl.edu>
To: "Lori Deitte" <deittl@radiology.ufl.edu>
Date: Wed, 06 Jan 2010 09:05:00 -0500
Subject: Re: Education Research Project

Dear Dr. Fielding:

I, on behalf of the department of Radiology UF COM, fully support and strongly encourage Dr. Deitte and the Department's involvement in the UNC education research project "Meeting the Challenges of Radiology Resident Education in the 21st Century: Redefining the Radiology Classroom through RAD-SHARE, Radiology (See, Hear And Respond Education) - A Collaborative Pilot Endeavor"

I understand we are committing to the participation of our residents in reviewing the on-line lectures on a volunteer basis. Additionally, Dr. Deitte will serve as a consultant in this project, as written in the portion of the grant proposal that follows:

"Lori Deitte, MD, FACR: Clinical Associate Professor of Radiology, Residency Program Director, University of Florida-Gainesville - She has extensive involvement in residency program directorship, having been involved in program directorship for both small and large training programs. She is an active leader in residency education serving as a member of the APDR Radiology Residency Restructuring Committee and RSNA Education Committee. Dr. Deitte will advise on curriculum content, especially in relation to core competencies for the comprehensive ABR exam. She will also serve as a liaison at a large program testing site in addition to providing lecture material."

With my most sincere wishes for the success of this project,

AAM
5. From Dr. Charles Green, Assistant Vice Chancellor for Information Technology Services, The University of North Carolina at Chapel Hill:

Dear Dr Llave,

Thank you for your note. My organization, Information Technology Services at UNC Chapel Hill, is very interested in your RAD-SHARE proposal. We feel that the knowledge that will be gained in supporting this type of project will prove of significant value to a number of our schools. The prospect of reusable learning modules is one that has drawn a lot of attention, not just locally, but from the higher education community in general. I’d like to reconfirm ITS’s commitment of support for your efforts. I, along with my team, look forward to working with you on this important project.

Regards,

Charles "Charlie" Green, PhD
Assistant Vice Chancellor for Information Technology Services
The University of North Carolina at Chapel Hill
440 West Franklin St.
Chapel Hill, NC 27599

(919) 445-9466
Dear Alfred,

I would be very happy to participate in this project.

I look forward to working with you, and the rest of the group.

thank you for including me,

Jocelyn

PS-Happy New Year!
7. From Dr. Peter Spiegel, Chairman, Dartmouth-Hitchcock School of Medicine Department of Radiology:

From: Peter K. Spiegel <Peter.K.Spiegel@hitchcock.org>
Date: 2010/1/5
Subject: RSNA Rad -Share project
To: "Jocelyn D. Chertoff" <Jocelyn.D.Chertoff@hitchcock.org>

Joc,

I unequivocally support your participation in the RadShare project.

Please let me know what I can do to help.

Sincerely

Peter K. Spiegel MD FACR

Chairman
Alfred,

This is a fascinating project, and I would be happy to participate as a consultant/contributor.

Best regards,

Gautham Reddy
9. From Dr. Angelisa Paladin, Program Director, University of Washington Department of Radiology

Alfred,

Your RSNA Education Grant Proposal is wonderful!

I would really enjoy being involved and I am very interested in involving our residents in the project.

Please let me know how I can be helpful,

Angelisa

----- Original Message ----- 
From: Angelisa Paladin <apaladin@u.washington.edu> 
Date: Friday, January 8, 2010 11:29 pm 
Subject: Re: RSNA Education Grant Proposal (fwd) 
To: "alfred_llave@med.unc.edu" <alfred_llave@med.unc.edu>

> I agree! Great idea.
> Ang
> Sent from my iPhone
> On Jan 8, 2010, at 8:26, alfred_llave@med.unc.edu wrote:
> Dear Dr. Paladin,
> With your approval, (and if we get funded, knock on wood) this
> might
> also be a good opportunity for A3CR2 members to help with
> the
> contributor recruitment process, as they would know who are
> the
> outstanding lecturers from their respective institutions and
> their
> "favorite lectures". This would help facilitate mapping out
> the
> curriculum. Even smaller programs have excellent lecturers and
> this
> could serve to recognize their work and also allow these
> radiologists to have a larger captive audience.
> Thanks,
> alfred
10. From Dr. Lori Deitte, Program Director, University of Florida Gainesville:

From: Lori Deitte <deittl@radiology.ufl.edu>
Date: Fri, Dec 18, 2009 at 3:00 PM
Subject: Re: updated draft: please see personel section
To: adrel2000@gmail.com

Response from the Education committee has been positive.
Looking forward to working with you on this.
-Lori
To Whom It May Concern,

This note serves as a letter of support for the contributions of the Information Technology Services’ Teaching and Learning Interactive team towards the proposed RAD-SHARE (Radiology: See, Hear And Respond Education) product as proposed by Drs. Fielding and Llave. Our team serves the University of North Carolina at Chapel Hill’s faculty in their efforts to fulfill the university’s state, national, and international education and research goals. The RAD-SHARE product has the potential to benefit not only the Radiologic Science profession, but all patients as well, with the focus on quality educational materials and resources. With the alignment to the University’s goals in addition to the positive instructional improvements in an important medical field, we believe the RAD-SHARE product has great potential.

We appreciate your consideration of the RAD-SHARE proposal.

Sincerely,

Kimberly Eke, Ph.D.
Manager, TL Interactive
ITS-Teaching & Learning
UNC-Chapel Hill
919.445.9472
twitter: TLInteractive

Megan R. Bell, MPM
Production and Project Manager
megan_bell@unc.edu | 919.445.9474
Purpose
To provide funding opportunities for individuals with an active interest in radiologic education.

Nature of Projects
Any area of education related to the radiologic sciences is eligible for Education Scholar Grant support. Projects may include, but are not limited to:

- advanced training in the discipline of education, possibly resulting in an advanced degree/certificate (development of teachers and educational leaders);
- development, dissemination and evaluation of printed or electronic educational materials;
- research of teaching methods and evaluation processes;
- education in emerging nations;
- medical student, resident, fellow, CME participant, allied health professional student education.

Amount
Up to $75,000 United States Dollars (USD) annually for up to two years ($150,000 USD maximum) for salary support and/or other project costs.

- The RSNA Research & Education Foundation does not pay institutional indirect costs or overhead costs.
- Travel expenses for the RSNA Scientific Assembly and Annual Meeting may not be paid for by this grant.
- Unexpended funds must be returned to the Foundation.

Payment Schedule
Education Scholar Grants begin in July. Grant payments will be made to the department in monthly installments.

Deadline for Application
Application is a two part process: 1) grant application must be submitted online - see the Foundation’s Website for details, RSNA.org/foundation; 2) a printed copy of the completed application, with original signatures, must be received in the Foundation office by January 10. If the deadline date falls on a weekend or holiday, the deadline will be extended to the next business day. Applications will not be accepted after the deadline date. Applications that are not complete, do not comply with the instructions, or do not have properly executed signatures, will not be reviewed.

Eligibility
- Applicant must be an RSNA Member (at any level) at the time of application. If the applicant's membership category is Member-in-Training or any other non dues-paying category, the scientific advisor or one of the co-investigators must be a dues-paying member.
- Applicant/co-principal investigator(s) must not be agents of any for-profit, commercial company in the radiologic sciences.
- Applicants may not submit more than one research or education grant application to the RSNA R&E Foundation per year.
- Recipients may not have concurrent RSNA grants.

Selection Criteria/Review Process
A study section consisting of physicians and scientists with expertise in the areas and topics of each grant will review the application for scientific merit, potential educational impact and appropriateness for funding. Final decisions will be subject to the approval of the Board of Trustees of the Research & Education Foundation. Applicants will be notified of the outcome of their applications by e-mail no later than May 15.

The following guidelines will be applied in the review process:

Education Plan: Evaluate the proposed educational activity. Are the purpose and goals clear and well developed? Are any experiments well designed and appropriate to test the hypothesis? Will the results have scientific value? Are research projects accompanied by appropriate statistical analysis? Is any advanced training in education described in terms of its impact on the future education of others in the radiologic sciences? Are the required educational resources available? Is there a reasonable chance of completion within the proposed time frame? Does the activity utilize novel theoretical concepts, approaches, methodologies, instrumentation or interventions? Does the activity fill a current need in radiology education? Will it advance the science of radiologic education? Is the budget realistic? Is there a described method of evaluation that will judge success or failure of the goals of the activity?
Applicant: Evaluate the training and experience of the applicant as they relate to the proposed educational activity. Does the applicant have a demonstrated interest in education? If an early career applicant, does he/she have adequate experience and training? If established, has he/she demonstrated an ongoing record of accomplishments that have advanced radiology education? Is the applicant’s time commitment realistic?

Department Commitment: Evaluate the commitment of the applicant’s institution and department to provide adequate support for the educational activity. Does the applicant have access to appropriate educational resources, including equipment, other materials, space, assistants, and mentors? Does the department allow appropriate time? Will the educational and scientific environment in which the work will be done contribute to the probability of success? Will the activity benefit from unique features of the educational and scientific environment, subject populations, or collaborative arrangements?

**CONDITIONS OF THE RSNA EDUCATION SCHOLAR GRANT**

1. **Commercial Sponsorship**
   A portion of the total funds available for the RSNA R&E Foundation’s grant programs is in the form of endowments from commercial companies or other sources; some recipients may have their grant named after a company. (An institution’s inability to accept endowed awards will not preclude the award.)

2. **Progress Reports**
   At the end of the first year, each recipient must submit an interim report that demonstrates progress toward the stated goals of the proposal. A final written report, including plans for dissemination of the acquired knowledge/expertise is due within six months after the end of the second year. Reports are distributed to the Foundation’s Board of Trustees to determine the effectiveness and success of the program. Failure to comply with the final report requirement may negatively affect the home institution department’s eligibility to receive future funds from the RSNA R&E Foundation.

Interim and final reports must begin with a summary statement not to exceed one page. Reports are to be submitted electronically (MS-Word) and accompanied by a printed, signed copy endorsed by the department chair. Complete reports must address each of the following:

**Interim Report:**
1. Restate the specific aims/goals of your educational plan and show the results of your work toward each aim/goal. Include all supporting data.
2. Indicate any deviations you have made from the original educational plan and justify these changes.
3. Indicate the expenditures you have made to date and how they relate to the project.
4. Indicate any problems or delays that you have encountered.

**Final Report:**
1. Restate the specific aims/goals of your educational plan and show the results of your work toward each aim/goal. Include all supporting data.
2. Indicate any deviations you have made from the original educational plan and justify these changes. If you did not reach one or more of your initial goals, explain why.
3. Indicate the expenditures you have made to date and how they relate to the project.
4. Indicate any problems or delays that you have encountered.
5. Indicate if the results from your studies are being prepared for publication or will be prepared for publication within the next six months.
6. Indicate if the results from your studies will be used as preliminary data in a grant application to another granting agency.
7. Indicate the clinical significance and future clinical impact of the results of your study.
8. Indicate the strengths and weaknesses of the RSNA Research & Education Foundation grant program in which you participated.
9. Indicate the influence or role that the grant from the RSNA Research & Education Foundation had on your career or will likely have in the future.

3. **Educational Material**
   For projects that result in educational materials for distribution and/or electronic publication (World Wide Web content, CDs, printed materials, etc), such distribution/publication becomes the responsibility of the grant recipients. Educational materials must be made available to RSNA and its members at no cost. Any funds generated directly or indirectly from the sale, lease or distribution of the final product will be donated to the RSNA Research & Education Foundation to help fund other projects. The final product may be reviewed and evaluated by the RSNA Education Committee for quality, need and educational value.

4. **Annual Survey**
   Recipients agree to participate in an annual survey that will help the Foundation’s Board of Trustees track current contact information, additional grant monies received from other sources, scientific publications, and career advancements.

5. **Publications**
   Scientific and educational manuscripts resulting from R&E Foundation-funded projects must be submitted first to the RSNA Scientific Assembly and Annual Meeting to be considered for presentation, and/or to *Radiology*, *RadioGraphics*, *Medical Physics*, or the *International Journal of Radiation Oncology, Biology and Physics* to be considered for publication (right of first refusal).
Manuscripts that are not accepted for publication in one of the four listed journals may be submitted to the journal(s) of the authors' choice. Authors who wish to bypass the right of first refusal process must receive written permission from the Grant Program Committee/Board of Trustees. One reprint of each publication produced as a result of RSNA R&E Foundation-funded work should be sent to the Foundation's address for distribution to the Trustees. All posters, publications, and oral presentations of R&E Foundation-funded projects must contain appropriate acknowledgment of the Foundation's support and sponsoring commercial company (if applicable).

6. Extension
A no-cost extension of the terms of this grant may be requested to extend the final budget period up to 12 months beyond the original ending date. Approval of an extension does not include the awarding of additional funds. A request for an extension along with a progress report must be made in writing to the chair of the Grant Program Committee at the Foundation’s address before the expiration of the original grant period. The request must state the reason(s) for the extension, length of the extension requested, and an explanation of how the reason(s) for the delay has been rectified. Requests must be co-signed by the department chair. Interim reports must be submitted every six months during the extension period. Other requests for changes to the terms of an award should be addressed to the chair of the Grant Program Committee with similar documentation and institutional approvals.

7. Modification or Termination of Support
The Trustees reserve the right to modify or terminate the amount of any funds granted under the terms of the Education Scholar Grant program. If the support level has to be modified by the RNSA R&E Foundation Board of Trustees for any reason, the grant recipient will be notified in writing at least 90 days prior, and the investigator will have the option to modify the education plan or terminate the grant.
Education Scholar Grant
Application Instructions and Guidelines

Grant applications must be completed online, http://grants.rsna.org/grants, printed, signed, and sent to the Foundation office to be received on or before the application deadline. Applications received after the deadline will not be accepted.

Section I: Summary of Proposed Education Program
This page, when separated from the rest of the application, should serve as a succinct and accurate description of the proposed education program. The summary should include the long-term goals of the proposed educational activity as it applies to the applicant and to the radiologic community. Abstract not to exceed 300 words.

A. Resubmission Information:
   Is this application based on a proposal submitted to the RSNA R&E Foundation within the past two years? If yes, please use the following link to provide brief details of the previous submission, including a summary of the reviewer comments and how each issue has been addressed in this proposal.

B. Title

C. Abstract

Section II: Applicant

A. Applicant Data Complete applicant personal and professional data.
   - Institution
   - Department
   - Country of Citizenship
   - If not a North American Citizen, do you have permanent resident status in a North American country? Specify
   - Key Training Dates (Degrees, Completion of residency and fellowship training)
   - Current year of training, or faculty position/rank
   - Grants received, Include all sources of funding. Specify the amount and percent effort for each
   - Number of peer-reviewed journal articles
   - Publications. List complete references to all publications during the past three years and to representative earlier publications pertinent to this application, including titles and all authors, in chronological order. If the list of publications in the last three years is excessive, select the most pertinent publications.
   - Time allocated to the proposed project, and to other duties. Specify percent and time frame.
   - Contact Information (Auto fill from RSNA membership database)

B. Biosketch
   NIH-style, limited to 4 pages

C. Priority Statement: Describe your area of professional/scientific interest(s) and long-term career goals and objectives. Explain how the opportunity of an Educational Scholar Grant relates to the personal plans and ambitions of the applicant, to the priorities of the host institution, and to the radiologic community in general. Not to exceed 1000 words.

D. Other Investigators (if any)
   Other investigators/scientific advisors/consultants who will contribute significantly to the project should be listed. Include a description of the role they will play in the proposed research project.

Section III: Education Plan

A. Detailed Education Plan:
   The description of the plan should be thorough but focused. Not to exceed 5 pages. Use 0.5” margins and size 11Arial font. Additional pages may be included for the bibliography.

   Introduction:
   - Rationale and Purpose: General statement of purpose. Describe why the project should be undertaken. For research projects, state theory and a brief literature review.
• Objectives: Specific statements of intended outcomes or expected results. Research hypotheses are appropriate for research studies.
• Student Population: What learner group(s) will be served by the project?
  Previous Experience: Relevant preliminary work/prior experience of investigator.

Project Plans:
• Activities: What specifically will be done to achieve the above objectives? How? Where? etc.
• Time Schedule: To whatever extent possible, present a schedule of dates when various aspects of the project will be completed.
• Outcomes: What types of new knowledge, educational programs or materials will be developed through this project?

Evaluation:
• How will the outcomes of the project be assessed in terms of the purpose and objectives?

B. Research Assurances
Will the project involve any of the following?
• human subjects (Y/N)
• vertebrate animals (Y/N)
• ionizing radiation/radioactive isotopes (Y/N)
• other, requiring institutional research assurance approval (recombinant DNA, etc) (Y/N)

Funded applicants will be required to submit appropriate forms before grant funds are released.

C. Resources and Environment
Describe major equipment, laboratory, clinical, animal, office/computer, support services, education resources, and other facilities (simulation centers, survey cores, etc) that will be available for this project.

Section IV: Budget

A. Detailed Budget:
Since plans differ, no specific format is required for this section. However, a complete description of the projected use of funds will assist the study section reviewers in determining the project's scope and feasibility. The budget should be a complete and detailed listing of the costs associated with the proposed program, including part-time salary support, tuition, supplies and materials, etc. Specify the total project budget and the amount requested (if different than the total project budget). Explain how costs not covered by this grant will be paid (departmental funds, etc). The RSNA Research & Education Foundation does not pay institutional overhead costs or indirect costs. Travel expenses for the RSNA Scientific Assembly and Annual Meeting may not be paid for by this grant.

B. Other Sources of Support (pending and received):
Other non-conflicting sources of support for the proposed activity are encouraged and should be identified.

C. Award Payment Information:
To facilitate fund disbursement if the grant is approved, please supply the payee information and mailing address. This information is available through the institution's research administration office. The institution will serve as the fiscal agent.
  • Grant checks payable to:
  • Grant checks sent to: Include contact name, mailing address, phone number, and e-mail.

Section V: Letters
If equipment or supplies for the proposed study will be provided by a source other than the applicant's department (such as a commercial company), include a letter of intent/agreement from that source. Similarly, if the study involves significant collaboration with individuals other than the scientific advisor, include appropriate letters of agreement. This section is not intended for letters of support/recommendation.

VI: Signatures
Enter the names and contact information for each individual that will sign the completed, printed application. Original signatures are required on the printed copy. Electronic reproductions will not be accepted.
• Department Chair
• Grant Administrator
• Grant Applicant
Questions?
Scott A. Walter, MS, Assistant Director - Grant Administration
Radiological Society of North America, R&E Foundation
820 Jorie Boulevard, Oak Brook, IL 60523
1.630.571.7816, swalter@rsna.org