Development of a Proficiency Based Skills Curriculum for the Fundamentals of Endoscopic Surgery

Primary Investigator: E. Matthew Ritter MD FACS*
Associate Investigators: James R. Korndorffer MD FACS# and Jonathan P. Pearl MD FACS^

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Statement of Funds

Funds for this project are not currently on hand, thus the reason for the grant application. Each of the participating institutions do have in place considerable resources to contribute to the success of this proposed project. The Uniformed Services University, Tulane University, and the University of Maryland all have American College of Surgeons Accredited Education Institutes in which this type of skills based educational research has been previously performed. Thus, there is considerable infrastructure available to support this protocol in terms of research space and personnel (technicians, IT / AV support, etc., see included Letters of Institutional Support) Additionally, all three centers are currently certified FLS test centers and all have either a Simbionix GI Mentor II or Bronch Mentor available. All have plans to become an FES test center as that process evolves. Finally, each facility has access to dedicated standard flexible endoscopy equipment and AV equipment for use in this protocol. Finally, the Uniformed Services University Joint Office of Technology Transfer is executing a Collaborative Research and Development Agreement (CRADA) with both Kyoto and Limbs and Things for the commercial production of the S.C.O.P.E. platform. Since this involves only minor modifications to the current Kyoto colonoscopy simulator, it is expected that a production quality version of the S.C.O.P.E platform would be used for the study and be commercially available prior to the completion of any research.
Summary

The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) has devoted significant resources to the development of the Fundamentals of Endoscopic Surgery (FES) program. Much like the Fundamentals of Laparoscopic Surgery (FLS), FES consists of both a high-stakes didactic examination and a skills test. If the FES program follows a trajectory similar to that of FLS, it will be widely disseminated and may become a requirement for American Board of Surgery Certification. Because of the high stakes associated with FES, it is necessary to develop a training program that would best prepare the learners for the skills examination, as well as provide a curriculum for skills remediation for those who are initially unsuccessful.

Based on the success of the previously developed FLS skills training curriculum, we will develop a proficiency based skills curriculum using the low-cost, non computer based Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E) platform. This will be done in 3 phases. In phase 1, experience endoscopists will define the performance goals that will be used in the curriculum. In phase 2, novice endoscopists will train on each of the S.C.O.P.E. tasks until they reach the performance goals. Their endoscopic skills will be assessed both before and after training with 3 different validated assessment tools, FES, S.C.O.P.E. and the Global Assessment of Gastrointestinal Endoscopic Skills for Colonoscopy (GAGES-C). Finally, for phase 3, the durability of skills acquisition will be evaluated with both 6 month and 12 month follow up for the novice endoscopists.
Background

The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) has devoted a significant amount of resources to the development of the Fundamentals of Endoscopic Surgery (FES) program. Much like the Fundamentals of Laparoscopic Surgery (FLS), FES consists of both a high-stakes didactic examination and a skills test. If the FES program follows a trajectory similar to that of FLS, it will be widely disseminated and may become a requirement for American Board of Surgery Certification in Surgery. Because of the high stakes associated with FES, it is necessary to develop a training program that would best prepare the learners for the skills examination, as well as provide a curriculum for skills remediation for those who are initially unsuccessful.

Proficiency based training has proven useful in preparing for FLS testing. In proficiency-based training, learners train to expert levels prior to high-stakes testing. Our group has been instrumental in the development of proficiency-based training for FLS. After completion of the proficiency based training program for FLS, learners have 100% certification pass rate. The skills acquisition was durable and learners were able to return to high levels of performance on simulators even after a lengthy hiatus from training. An analogous proficiency-based training program for FES would likely demonstrate similar utility.

FES relies on a computer-based platform for skills testing. A commercially available virtual reality (VR) endoscopy simulator with software modifications will be used to administer the examination. VR simulators such as the one used for FES have several limitations: high maintenance costs, suboptimal durability, and difficulty mimicking the feel of performing live clinical cases. Furthermore, the start-up costs of the simulator used for FES range from $40,000 to over $100,000. Such costs will likely be prohibitive to many surgery training programs and simulation centers, therefore regional testing centers are being developed.

The SAGES FES Task Force, in collaboration with SAGES leadership, has opted not to allow practice on the specific FES tasks. Even those centers who own the VR simulator will only be able to access the FES skills for testing. Without access to the FES tasks, or tasks which closely mimic those in FES, learners may be inadequately prepared for taking the high-stakes exam.

We perceived a need for an affordable, non-computer based, assessment tool that can be used for training in basic flexible endoscopy. Our program, termed Simulated Colonoscopy Objective Performance Evaluation (SCOPE), uses a commercially available physical colonoscopy model and a standard colonoscope to perform four specific tasks: scope navigation, tool targeting, loop reduction, and mucosal inspection with retroflexion. The physical model has several distinct advantages over computer based models. Since a genuine colonoscope is used, the learners gain familiarity with the handling of the same instruments used in clinical. The physical model uses a rubber colon designed to mimic the feel of a true colon. The maintenance costs are low since
there are no computerized components of the model. In addition, the acquisition costs are affordable, with an initial investment of less than $10,000 required to begin training.

Our preliminary data using the physical colonoscopy model and our SCOPE program have been encouraging. We have shown that SCOPE, based on the above four tasks, can be administered in less than 50 minutes per learner. We have identified the key metrics for incorporation into a scoring system and have accumulated validity evidence that the SCOPE scoring system objectively assesses the technical skills required to perform standard flexible endoscopy. For each of the four tasks, we have validity evidence that task scores reliably differentiate between novices, intermediates, and experts. Our data indicate that SCOPE is a reliable, simple program for simulating basic flexible endoscopy. SCOPE could be an ideal training platform to prepare for basic clinical endoscopy and FES testing. 7-9

The goal of this proposal is to develop a proficiency based skills curriculum for FES using SCOPE. We will draw on the success of proficiency based training for FLS and apply the same methodologies to FES. A proficiency based skills curriculum for FES using SCOPE could help prepare learners for the FES examination and could foster the success of the entire FES program.
Hypothesis

Our hypothesis is that training to expert derived performance goals on a non-computer based flexible endoscopy simulator will allow a group of novice endoscopists to acquire a level of skill adequate to achieve a greater than 80% pass rate on the manual skills portion of the Fundamentals of Endoscopic Surgery (FES) assessment. After completing this proficiency based curriculum, these novice endoscopists will also demonstrate performance scores on the Global Assessment of Gastrointestinal Endoscopic Skills for Colonoscopy (GAGES-C) and Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E.) assessments equivalent to intermediately experienced endoscopists (50 - 140 endoscopies). Finally, the group of novice endoscopists who complete this proficiency based curriculum will demonstrate significantly higher scores on FES, GAGES-C, and S.C.O.P.E when compared to a control group that simply undergoes repeat assessment without any formalized curriculum (to control for learning effect of repeated assessment).
Methods

Subjects: Two distinct categories of subjects will be needed:

**Novice subjects (NS):** 45 novice subjects will be recruited. (See power analysis) Inclusion criteria include any healthcare professional adult > 18 years of age who has not had significant previous experience with a flexible endoscopic simulator and has performed less than 10 endoscopies (EGD and colonoscopy). Significant endoscopic simulator experienced is defined by self reported time on any endoscopic simulator of greater than 5 hours, or having previously completed a formalized endoscopy training curriculum. Professional backgrounds include but are not limited to medical students and resident physicians. Subjects will be recruited regardless of pregnancy status. Subject data will be identified in databases only by subject number. No identifying data will be recorded and performance will in no way affect any subjects course grading or evaluation on any rotation.

**Experienced subjects (ES):** 30 experienced subjects will be recruited (see power analysis) Inclusion criteria include any gastrointestinal healthcare professional adult > 18 years of age who has performed more than 50 endoscopies. Professional backgrounds include and are limited to General Surgery PGY >= 4, Gastroenterology fellows, General, Colorectal, and Minimally Invasive Surgeons, and Gastroenterologists. Subjects will be recruited regardless of pregnancy status. Subject data will be identified in databases only by subject number. No identifying data will be recorded and performance will in no way affect any subjects grading or evaluation on any rotation, or credentialing.

**Apparatus and Procedures:**

**Kyoto Colonoscopy Simulator:** A non-computer based physical colonoscopy model manufactured by Kyoto Kagaku Co Ltd, Japan. A plastic external form contains a latex simulated colon that can be configured into different "cases" based on the standard inserts included. This model must be used in conjunction with a colonoscope with capabilities for insuflation, irrigation, and suction, connected to an imaging system and displayed on a 4:3 aspect ratio video monitor.

**GAGES-C Assessment:** for this assessment, subjects will perform a simulated colonoscopy on the Kyoto simulator. This will involve navigating to the cecum on a standardized case, followed by withdrawal and mucosal inspection to identify 5 numbered targets. For 3 of the targets, subjects will be asked to make contact with them using a standard biopsy forceps. External views of the endoscope and the subjects hands will be video recorded along with the endoscopic view combined into one screen using a video mixer. The recordings will then be scored using GAGES-C scoring system, which assesses scope navigation, use of strategies (loop reduction, positioning, etc), ability to keep a clear field, instrumentation (facility using tools) and quality of exam each on a anchored 5pt likert scale. Evaluators using the scoring system will be blinded to the subjects group and training status.

**Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E):** This is based on the framework of the Kyoto platform described above but has been modified into 4 separate tasks
that include performance metrics and a scoring system. The tasks include **Scope Manipulation**: requires use of torque and tip deflection to move a shape in the colon to the 6 o'clock position and align that shape within an outline of the shape placed upon the monitor screen. Alignment must be held for 5 seconds for each shape before continuing to the next shape. The modified colon contains 10 shapes in various locations. **Tool Targeting**: requires coordination with biopsy forceps to contact a metal target, completing a circuit and sounding a tone. Contact must be maintained for 5 seconds on each target before continuing to the next. The modified colon segment contains 10 targets in various locations. **Loop Management**: perform scope navigation to correctly manage the formation of a standard alpha loop. The task is to insert the scope in the simulated rectum followed by navigation to the cecum through a redundant sigmoid. If a loop is formed, it must first be recognized and then successfully reduced to continue advancing the colonoscope. The task will begin in the left lateral decubitus position but on request, the task can be repositioned in the supine, prone, or right lateral decubitus position. Additionally, abdominal pressure can be provided by the proctor where and when directed by the subject. **Mucosal Inspection**: during withdraw of the colonoscope, identification of polyps placed randomly throughout a length of simulated colon and rectum requiring careful mucosal inspection, including retroflexion.

As an assessment, the tasks are administered sequentially by a proctor using a standard instruction script and standardized scoring metrics. As a training tool, subjects will train on each task until a defined expert performance proficiency level is reached.

**Fundamentals of Endoscopic Surgery (FES)**: The manual skills portion of the FES program is based in virtual reality and delivered by either the GI Mentor II or Bronch Mentor simulators (Simbionix USA, Cleveland OH). It consists of 5 task that assess scope navigation, tool manipulation, loop reduction, retroflexion, and mucosal inspection. The exam is completely computer based and is administered by a proctor. All task instructions and scoring are completed by the computer based simulator and uploaded to a network server. The FES exam can only be given at FES test centers.

**Methods:**

**Phase I: Establishing performance goals and references**- This phase will involve the ES group to define the task specific training goals for the novice curriculum. Each ES subject will complete a GAGES-C assessment followed by 3 trials of each of the S.C.O.P.E tasks. Three trials are used to help ensure that the simulator specific learning curve has been accounted for. The GAGES-C scores will be used to help calibrate performance of experienced endoscopist on the Kyoto model as the GAGES-C data to date has come from actual colonoscopies. The mean trial 3 performance on each of the S.C.O.P.E tasks will be used to set the proficiency levels for the training curriculum to be utilized in Phase II.

**Phase II: Assessing the effects of the curriculum**- The NS group will be randomized in a 2:1 ratio between the training group (NST) and the control group (NSC) respectively. Both groups will undergo a pretest consisting of a GAGES-C assessment, a S.C.O.P.E assessment, and an FES assessment. Subjects in the NST group will then train to the proficiency levels established in Phase I for each of the S.C.O.P.E tasks. The NST group will then undergo a posttest.
consisting of a GAGES-C assessment, S.C.O.P.E assessment, and FES assessment within 2 weeks of completion of the curriculum. NSC subjects will receive no training during this phase and will return for the posttest after the same amount of time as it took for the NST group to complete their training. Both groups will be queried as to any additional clinical endoscopic experience that they received between the pretest and the posttest. Once the NSC subjects complete the posttest, they will be allowed to complete the curriculum if they wish, including an additional post curriculum assessment within 2 weeks of curriculum completion.

Phase III: Long term follow up- All subjects who complete the curriculum in both the NST and NSC groups will be asked to return for additional assessment at 6 months and 12 months. Subjects will be queried as to any additional clinical endoscopic experience that they received between the assessments. This follow up assessment will consist of 3 trials of each S.C.O.P.E. task to evaluate for rapid spontaneous recovery of skills seen in previous similar studies. They will also undergo an FES assessment.

Data Analysis: For continuous variables, mean performance differences between pretest and posttest assessment within groups will be statistically assessed for significance using paired t-test. Mean performance differences between groups will be statistically assessed for significance with unpaired t-tests. Differences for multiple repeated measures during long term follow up will be assessed with repeated measure ANOVA. For proportions, rates of achieving a passing score on the FES assessment will be statistically assessed for significance using Fishers exact test or chi squared as appropriate.

Sample Size / Power Analysis

Samples size can be estimated using previous data for two of our primary endpoints stated in the hypothesis, GAGES-C and S.C.O.P.E. Previously published GAGES-C scores for novice and intermediate endoscopists showed a difference in means between the two groups of approximately 6, with a standard deviation in the novice group of 3.8 and intermediate group of 1.6. If we use a paired, two tailed t-test (since our subjects undergo a pre-test then a post-test) with alpha set at 0.05, estimated standard deviation of 5.5 and a power of 80%, then we need 9 subject to be able to reject the null hypothesis. Since the exact difference in performance improvement is unknown, Figure 1 shows sample size and power for a difference in means ranging from 3 to 6.

![Figure 1: Required sample size as a function of statistical power for differences in means between groups ranging from 3 to 6](image)

Similar calculations can be done using the S.C.O.P.E. score endpoint. Unpublished data currently undergoing peer review showed that for S.C.O.P.E score, novice and intermediate
endoscopists showed a difference in means between the two groups of approximately 115 with a standard deviation in the novice group of 94 and intermediate group of 62. If we apply the same paired, two tailed t-test with alpha set at 0.05, estimated standard deviation of 150 and a power of 80%, then we need 15 subject to be able to reject the null hypothesis. Since the exact difference in performance improvement is unknown, the graph below shows sample size and power for a difference in means ranging from 95 to 125.

Based on these evidence based estimates, a sample size of 24 experimental subjects would allow us to be well powered across a broad range of differences in mean performance. If we allow for a 20% drop out rate, since participation is completely voluntary, that would result in recruiting 30 novice experimental subjects. or 10 subjects / site. In a separate analysis conducted similar to the ones above (not shown), approximately 12 control subjects would be required to reject the null hypothesis between the experimental and control groups with an 80% power. Applying the 20% drop out rate to the control group brings the target subject recruitment to 15, or 5 / site.

Comparison of the ES group with other groups is not part of our hypothesis testing, as this group serves to establish the reference criteria for the GAGES assessment and the proficiency scores for S.C.O.P.E. An estimated recruitment of up to 10 subjects per site should be more than adequate to ensure a broad representation of the desired skill set.
## SAGES RESEARCH GRANT APPLICATION

**BUDGET SHEET**


Dollar amount requested (Omit cents) 30,000

Total for the grant request may not exceed $30,000.

* Salary funds should be used for staff required to execute the study, but should not be used for salary support for the primary investigator. If salary support exceeds 50% of the project budget, then specific justification is required.

**Funds requests for travel for the presentation of a SAGES funded study should be limited to $1,000.

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<td>Principal Investigator*</td>
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<td>2. James Korndorffer</td>
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<td>3. Johnathan Pearl</td>
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### CONSULTANT COSTS

**EQUIPMENT**
(List all Items & Total Equipment Cost)

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<td>Kyoto Colonoscopy SCOPE Models (6 at $2,500 each, total $15,000), Colon Insert (6 at $1,000 each, total $6,000), MacBook pro computer 13 inch (3 at $1,300 each, total $3,900), Mac Software $660, Misc recording / simulator maintenance supplies $190</td>
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**SUPPLIES**
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<td>PI site visit travel to Tulane and UMD two visits each $3,250, SAGES meeting travel for presentation - $1000</td>
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### PATIENT CARE COSTS

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Budget Justification

Personnel

E. Matthew Ritter, MD (5% Effort), Principal Investigator. Dr. Ritter will lead the research effort. He will oversee the resident researchers and Associate-Investigators. He will submit the protocol to and be the lead contact for the IRB, which will allow the residents enrolled in the courses to take a skills test. Finally, he will present his findings at the SAGES meeting. Since his salary is paid for by the US Air Force, no salary support is requested.

James Kornfdorffer, MD (4% Effort), Associate Investigator from Collaborating Organization. Dr. Kornfdorffer will lead the research effort at Tulane. He will oversee the residents and fellows’ work there and report results to the PI, Dr. Ritter. No salary support is requested.

Jonathan Pearl, MD (4% Effort), Associate Investigator from Collaborating Organization. Dr. Pearl will lead the research effort at the University of Maryland, School of Medicine. He will oversee the residents and fellows’ work there and report results to the PI, Dr. Ritter. No salary support is requested.

Equipment $0

Supplies $25,750

$15,000 is requested for Kyoto colonoscopy SCOPE models (6 at $2,500 each), which mimic real human tissues, and the residents and fellows will use to practice their techniques on them hands on. $6,000 is requested for colon Inserts (6 at $1,000 each) to be placed inside the Kyoto colonoscopy SCOPE models (above) so that students can practice their techniques on them. $3,900 is requested for MacBook pro computers 13 inch (3 at $1,300 each) so that student scope images and skills test results can be captured at each of the three worksites, maintain and organize data and protocol documents, communicate among the sites, and organize skills test documents and materials. $660 is requested for Mac Software to record images and for basic word processing and spreadsheet applications. $190 is requested for miscellaneous recording / simulator maintenance supplies to maintain the camera equipment and keep the simulator models in good working condition.

Travel $4,250

$1,000 is requested for travel to the SAGES meeting for the PI to present the results of the project. $3,250 is requested for two site trips (each) to the University of Maryland in Baltimore, MD and to Tulane University in New Orleans, Louisiana for the PI to meet with the Associate-Investigators to exchange ideas and discuss the progress of the project.

Other Expenses $0

Indirect Cost $0

There will be no indirect cost requested for this project.
References

Local/Institution Review Board

The IRB submission packet is being assembled as the grant is being prepared and will be submitted concurrently with the grant application. Given that this is standard educational research evaluating a new curriculum, with no procedures being performed on either humans or animals, we do not expect any IRB approval issues.
Available Resources

The Department of Surgery at the Uniformed Services University collaborates frequently with the National Capital Area Medical Simulation Center and the newly opened Walter Reed National Military Medical Center Simulation Center, which is an American College of Surgeon Accredited Education Institute (ACSAEI). Between the two, there's more than 20,000 sq ft of training space with approximately 2000 dedicated to surgical skills in the Procedural Skills Training Lab (PSTL). The PSTL has two endoscopic towers, the S.C.O.P.E prototype, and a newly ordered Bronch Mentor simulator to contribute to this project. Additionally, AV recording equipment along with salaried technician support will be available. The National Capital Consortium General Surgery Residency program supports the educational research effort with a funded research resident in the lab as well. The PI of this, project, Dr. Ritter, serves as the Director of Surgical Simulation at the Walter Reed SimCenter and has been the Assistant Surgical Director at the NCAMSC for the last 8 years.

The Department of Surgery at Tulane works closely with The Tulane Center for Advanced Medical Simulation and Team Training. The center is a 14,000 sq ft facility that is also an ACSAEI. The facility has all of the required tools for flexible endoscopy simulation, including a Simbionix Bronch Mentor. The center also has salaried tech support and AV equipment to contribute to the success of this project. The Tulane AI, Dr. Jim Korndorffer, serves as the Medical Director for the center. A letter of collaboration from Dr. Korndorffer is included below.

The Department of Surgery at the University of Maryland School of Medicine plays an integral role in the Maryland Advanced Simulation, Training, Research, and Innovation (MASTRI) Center. The MASTRI Center's main facilities are located in a 3,600 square foot wing of the University of Maryland Medical Center. The primary simulation areas consist of four converted operating rooms now serving as a configurable part-task training room, variable function room, whole-task trainer room, and cognitive and physical ergonomics research laboratory. The part-task training room serves as the hub for surgical simulation. The space houses 6 FLS box trainers, two VR laparoscopy trainers, and one GI Mentor II endoscopy simulator. There is ample space to house additional training models. The full-time staff members at the MASTRI Center include a director, two training and simulation specialists, and three administrative personnel. Medical and surgical simulation educators come from the various departments within the Medical Center. A letter of collaboration from Dr. Pearl, who is intimately involved in the MASTRI center is included below.
Participation in SAGES

All of the investigators are long time SAGES members and active participants in SAGES. All are fellowship trained in minimally invasive surgery through SAGES approved fellowship programs and have active surgical endoscopy practices. Dr. Pearl has additional expertise in Advanced Flexible GI endoscopy. All investigators serve on the SAGES FES Committee, in addition to multiple other SAGES committees. The PI, Dr. E. Matthew Ritter was the co-author and co-developer of the FLS proficiency based skills training curriculum, and serves as a co-chair of the FLS committee. All three investigators have been faculty and/or course chairs for multiple FLS / Flexible endoscopy courses at SAGES and ACS meetings.
BIOGRAPHICAL SKETCH

NAME
Eric Matthew Ritter (Matt)

eRA COMMONS USER NAME
Norman M. Rich Department of Surgery
USUHS, Bethesda MD

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as)

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<td>MD</td>
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<td>Clinical Fellowship</td>
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A. Personal Statement
The goal of the current proposal is to develop and evaluate the effectiveness of a proficiency based skills training curriculum for the manual skills portion of the Fundamentals of Endoscopic Surgery (FES) program. I am well suited to lead this for three main reasons.
First, clinical expertise. I am a practicing surgical endoscopist, with fellowship training, and 10 years of experience as an endoscopic surgeon. I have a vested interest for both my patients and students to develop solid educational curricula. Reason number two, research experience. As you can see from my references, I was instrumental in the development of a proficiency based curriculum for the Fundamentals of Laparoscopic Surgery (FLS) program. The availability of this curriculum strongly influenced the American Board of Surgery in their decision to mandate FLS certification. I can do the same for FES. Finally, national influence. I am uniquely positioned in both the civilian and military academic communities to ensure wide ranging application and support of a curriculum such as this one. My leadership positions within SAGES as well as the DoD simulation and education communities allow me access to key decision makers that can ensure dissemination of this work at the highest levels. My assembled research team and I are ready to get to work.

B. Positions and Honors.

Positions and Employment

2012 Aug - present  Vice Chairman, Education, Norman M. Rich Department of Surgery, USUHS, Bethesda MD
2012 - present  Associate Professor, Norman M. Rich Department of Surgery, USUHS, Bethesda MD
2011 - present  Surgical Director, Walter Reed National Military Medical Center Simulation Center, Bethesda MD
2011 Aug - present  Attending Surgeon, Walter Reed National Military Medical Center, Bethesda MD
2011 Jun - December  Chief of Surgery and Theater Inpatient Trauma Services, 455th Expeditionary Medical Group, Task Force Med East, Craig Joint Theater Hospital, Bagram Air Base, Afghanistan
2010 Jan - July 2012  Chief, Division of Academic Surgery, Norman M. Rich Department of Surgery, USUHS, Bethesda MD
2009 Aug – Nov  General/Trauma Surgeon 455th Expeditionary Medical Group, Task Force Med, Craig Joint Theater Hospital, Bagram Air Base, Afghanistan
2009 May – Aug General/Trauma Surgeon, 332nd Expeditionary Medical Group, Joint Base Balad, Iraq
2008 Aug - 2009 Nov Chief, Minimally Invasive Surgery and Emerging Technologies, Norman M. Rich Department of Surgery , USUHS, Bethesda MD
2007 Jan – Jun General Surgeon/ Surgical Services Chief, 379th Expeditionary Medical Group, Al Udeid AB, Qatar
2006-2011 Attending Surgeon, Walter Reed Army Medical Center, Washington, DC
2005 Jan - 2011 Dec Assistant Director, Surgical Simulation, National Capital Area Medical Simulation Center, USUHS, Silver Spring MD
2005-2012 Assistant Professor, Norman M. Rich Department of Surgery, USUHS, Bethesda Maryland.
2004-2005 Attending Surgeon, National Naval Medical Center, Bethesda MD
2003-2004 Attending Surgeon, Emory University Hospital/Emory Clinic Atlanta GA
2003-2004 Attending Surgeon, Crawford Long Hospital, Atlanta GA

**Other Experience and Professional Memberships**

- Member, Fundamentals of Endoscopic Surgery Committee, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) July 2012 -present
- Chair, Fundamentals Test Center Sub-Committee, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) July 2012 -present
- Co-Chair, Fundamentals of Laparoscopic Surgery Committee, Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). April 2009 - present
- Member, Simulation Committee, Association for Surgical Education (ASE) December 2009-present
- Member, Clerkship Directors Committee, Association for Surgical Education (ASE). December 2009-present
- Site Reviewer, American College of Surgeons Education Institute Committee, October 2005 - present

**Selected Honors**

2010  American College of Surgeons, Surgeons as Educators Course, Participant
2009  David G. Burris Deployment Award, Uniformed Services University, Norman M. Rich Department of Surgery.
2008  Golden Apple Award for Most Outstanding Surgical Educator. National Naval Medical Center Department of General Surgery.
2006  David C. Wherry Emerging Technologies Award, Uniformed Services University, Norman M. Rich Department of Surgery.
1996  Alpha Omega Alpha, Gamma Chapter of Maryland, Bethesda Maryland.
C. Selected peer-reviewed publications

**Most relevant to current application**


3. Scott DJ, **Ritter EM,** Tesfay ST, Pimentel EA, Nagji A, Fried GM. Certification Pass Rate of 100% for Fundamentals of Laparoscopic Surgery skills after Proficiency Based Training. Surgical Endoscopy 2008 22(8); 1887-1893


**Other selected peer reviewed publications**


C. Research Support.

**Ongoing Research Support**

90VW-01 USUHS, Office of Program Development   Ritter (PI)          10/2012 - 10/2014
Fundamentals of Laparoscopic Skills Training at a Reduced Cost
This project will compare newly developed reduced cost training strategies for the Fundamentals of Laparoscopic Surgery (FLS) with the standard training platforms and strategies.
Funding $28,000
Role: PI.

The goal of the project is to refine the FLS curriculum into a one day didactic course that includes patient safety and deliver the training to all Military hospitals with eventual goal of requiring certification on FLS as a minimum to perform laparoscopic procedures.
Funding: $261,413 total funding
Role: PI

**Completed Research Support**

Development of a Scenario Based, Simulation Enhanced, Team Oriented, Patient Safety Curriculum for Teaching Upper and Lower Endoscopy.
Grant is aimed at the development of a curriculum for improving patient safety during endoscopy
Funding: $183,150
Role: Co-PI

W81XWH-05-1-001 US ARMY (USAMRAA)  Bowyer (PI) 10/3/05-10/2/06
Scientific Educational Validation Study of Rapid Fire/Smart Tutor
This study is a designed to validate a novel laparoscopic simulator that adjusts difficulty based on student performance on the simulator.
Funding: $20,000
Role: Co-PI
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korndorffer Jr., James R</td>
<td>Professor of Surgery</td>
</tr>
</tbody>
</table>

| eRA COMMONS USER NAME (credential, e.g., agency login) |

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

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulane University, New Orleans LA</td>
<td>B.S. E.</td>
<td>05/86</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>University of South Florida, Tampa, FL</td>
<td>MD</td>
<td>05/90</td>
<td>Medicine</td>
</tr>
<tr>
<td>Carolinas Medical Center, Charlotte, NC</td>
<td>Residency</td>
<td>06/95</td>
<td>General Surgery</td>
</tr>
<tr>
<td>Tulane University Health Sciences Center</td>
<td>Fellowship</td>
<td>06/05</td>
<td>Minimally Invasive Surgery</td>
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<tr>
<td>University of Illinois, Chicago, Chicago, IL</td>
<td>Masters</td>
<td>05/11</td>
<td>Health Professions Education</td>
</tr>
</tbody>
</table>

A. Personal Statement

The goal of the proposed research is to develop a proficiency-based training program in flexible endoscopy on a physical colonoscopy platform. I am an expert in flexible endoscopy having been trained during residency and routinely performing endoscopy in practice. I serve on the SAGES FES Task Force.

I have vast experience in surgical simulation and am the medical director of the Tulane Center for Advance Medical Simulation. At the Center train surgery residents through a proficiency-based endoscopy program using virtual reality. Dr E Matthew Ritter and I have collaborated on numerous projects in the past. Developing a proficiency-based training program using this model could provide a cost-effective means of training for FES. This grant would provide be the impetus for developing this valuable, cost-effective training program.

B. Positions and Honors

Positions and Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Position and Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 – present</td>
<td>Vice-chair, Department of Surgery, Tulane University School of Medicine</td>
</tr>
<tr>
<td>2010 – present</td>
<td>Professor, Department of Surgery, Tulane University School of Medicine</td>
</tr>
<tr>
<td>2005 to 2010</td>
<td>Associate Professor, Department of Surgery Tulane University School of Medicine</td>
</tr>
<tr>
<td>2004 to 2005</td>
<td>Instructor of Surgery, Department of Surgery Tulane University School of Medicine, New Orleans, LA</td>
</tr>
<tr>
<td>2003 to 2004</td>
<td>Advanced Laparoscopy Research Fellow, Tulane Center for Minimally Invasive Surgery Tulane University, School of Medicine, New Orleans, LA</td>
</tr>
<tr>
<td>1997 to 2003</td>
<td>General Surgeon, Active Staff Baptist Medical Center East Montgomery, Alabama</td>
</tr>
<tr>
<td>1995 to 1997</td>
<td>General Surgeon, Active Staff, Fayette Medical Center, Fayette, Alabama</td>
</tr>
</tbody>
</table>
Other Experience and Professional Memberships

2012 – present  Society of Gastrointestinal and Endoscopic Surgeons Fundamentals of Endoscopic Surgery Committee
2012 - present  American College of Surgeons Committee on Validation of Surgical Knowledge and Skills
2009 - present  Society of Gastrointestinal and Endoscopic Surgeons Fundamentals of Laparoscopic Surgery Committee
2008 - present  Association for Surgical Education Committee on Graduate Surgical Education Vice Chair 2009-2011, Chair 2011-present
2009 - 2012  Association for Surgical Education Foundation Board
2008 - present  Association for Surgical Education Committee on Simulation
2008 – present  Association of Academic Surgeons Institutional Representative
2008, 2012  American Board of Surgery Associate Examiner
2005 - present  Society of Gastrointestinal and Endoscopic Surgeons (SAGES) Guidelines Committee
2006-2007  NSABP Principal Investigator
2004-2009  SAGES Resident Education Committee

Honors

2009  Minimally Invasive Surgery Leadership Summit Participant
2006  American College of Surgeons, Surgeons as Educators Course Participant
2005  American College of Surgeons, Young Surgeons Representative, Louisiana Chapter
1998  Fellow, American College of Surgeons
1994 - 1995  Best Surgical Resident Teacher, Carolinas Medical Center
1990  University of South Florida COM Student Government Distinguished Service Award
1987 – 1989  Class Vice President University of South Florida COM

C. Selected Peer-reviewed Publications

7. Davidson IJA, Yoo MC, Biasucci DG, Browne P, Dees C, Dolmatch, B, Gallieni M, La Greca A,


D. Research Support

**Ongoing Research Support**

- Board of Regents of the State of Louisiana OPT-IN-11 3/13 - present
  Title: Hydra laparoscopic surgical system
  Goal is the development and testing of a novel laparoscopic surgical device
  Role: Principle Investigator
- Doctors Company 5/10-12/12
  Simulation analysis of adverse outcomes: Determination of root cause.
  Physical disability, depression and substance abuse in the elderly
  The goal of this study is to use simulation to identify root casus of adverse events based on closed claims.
  Modifications will be implemented and repeat simulation perform to determined if correction occurred.
  Based on results physician training will be developed to minimize further adverse events.
  Role: PI
- Covidien 7/10 – 12/12
  Economic impact of uniformity in energy-based devices.
  The goal of this project is to evaluate the impact on work flow and work satisfaction in the operating room after standardization of equipment occurs.
  Role: PI

**Completed Research Support**

- Society of American Gastrointestinal and Endoscopic Surgeons 6/10 – 7/11
  Do motion metrics lead to improved skill acquisition on simulators.
  The goal of this study is to compare the effects of motion metrics and time metrics on training and skill retention.
  Role: co-PI
A. Personal Statement

The goal of the proposed research is to develop a proficiency-based training program in flexible endoscopy on a physical colonoscopy platform. I am an expert in flexible endoscopy having accomplished more than one thousand total endoscopic cases during residency, fellowship, and during 5 years as an attending surgeon. I am a frequent instructor in SAGES and ACS flexible endoscopy courses and have served on the SAGES FES Task Force over most of its existence.

In addition to my expertise in flexible endoscopy, I have vast experience in surgical simulation. At the National Capitol Area Simulation Center I led scores of surgery residents through a proficiency-based FLS training program. I currently hold a leadership position at the Maryland Advanced Simulation Training Research and Innovation (MASTRI) Center.

Dr E Matthew Ritter and I collaborated on the development of the SCOPE model for colonoscopy simulation training. Developing a proficiency-based training program using this model could provide a cost-effective means of training for FES. This grant would provide be the impetus for developing this valuable, cost-effective training program.

B. Positions and Honors

**Positions and Employment**

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2005</td>
<td>Resident, General Surgery, National Naval Medical Center, Bethesda, MD</td>
<td></td>
</tr>
<tr>
<td>2005-2006</td>
<td>Ship’s Surgeon, USS GEORGE WASHINGTON, Norfolk, VA</td>
<td></td>
</tr>
<tr>
<td>2006-2007</td>
<td>Fellow, Advanced Laparoscopy and Endoscopy, Case Western Reserve School of Medicine, Cleveland, OH</td>
<td></td>
</tr>
<tr>
<td>2007-2012</td>
<td>Assistant Professor of Surgery, Uniformed Services University, Bethesda, MD</td>
<td></td>
</tr>
<tr>
<td>2007-2012</td>
<td>Staff Surgeon, National Naval Medical Center, Bethesda, MD</td>
<td></td>
</tr>
<tr>
<td>2012-present</td>
<td>Assistant Professor of Surgery, University of Maryland School of Medicine, Baltimore MD</td>
<td></td>
</tr>
<tr>
<td>2012-present</td>
<td>Chief, Perioperative Services, VA Medical Center, Baltimore, MD</td>
<td></td>
</tr>
</tbody>
</table>
Other Experience and Professional Memberships
2008-2011 Councilor, Washington, DC Chapter, American College of Surgeons
2008-2011 Chair, Young Surgeons Committee, DC Chapter, American College of Surgeons
2008-present Member, SAGES FES Task Force and SAGES Guidelines Committee
2009-present Ad hoc reviewer, Surgical Endoscopy

Honors
1995 Phi Beta Kappa, University of Michigan
2004 First Prize, Surgical Residents Competitive Forum, DC Chapter, ACS
2005 Winner, Harry B Zehner Traveling Fellowship, DC Chapter, ACS

C. Selected Peer-Reviewed Publications
Most relevant to the current application
2. Pearl JP, Marks JM. The future of teaching surgical endoscopy. Surg Innov. 2006; 13(4)

Selected peer-reviewed publications

D. Research Support

None
Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E.): A non-computer based tool for assessment of endoscopic skills

Ritter EM, Cox TC, Trinca K, Pearl JP

**Introduction:** Virtual reality (VR) simulators have dominated the assessment of endoscopic skills. While VR simulators have significant benefits, they are frequently limited by high startup and maintenance costs, suboptimal durability with heavy use, and difficulty creating the "real feel" of GI endoscopy. These limitations led us to develop our physical model for endoscopic skills assessment, similar to models seen in other aspects of surgical skills assessment and training. The Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E.) was developed to fill the need of a lower cost, non-VR based, valid assessment tool. The purpose of this study was to evaluate the ability of this new tool to objectively assess endoscopic skills.

**Methods:** Four tasks were created to evaluate the core skills for diagnostic endoscopy using the Kyoto Kagaku colonoscopy model (Kyoto Kagaku Co Ltd, Japan) as a base platform. The four tasks include: **Scope Manipulation** requiring use of torque and tip deflection to align a shape in the colon with a matching shape on the monitor screen. **Tool Targeting** requires coordination with biopsy forceps to contact a metal target. **Loop Management** requires prevention, recognition and reduction of a redundant sigmoid colon with navigation to the cecum. **Mucosal Inspection** requires identification of simulated polyps placed randomly throughout a length of simulated colon and rectum, including retroflexion. Key performance metrics were identified and a scoring system developed based on these parameters. Scores for each task were normalized to allow equal weighting for all four tasks. Thirty-five subjects were recruited for this prospective study and stratified into 3 cohorts based on colonoscopy experience: novice (0-50 colonoscopies) (n=11), intermediate (51-139) (n=13), and experts (>140) (n=11). Subjects performed 2 trials of all 4 of the above tasks. Mean normalized scores were compared between groups for both the individual tasks and the total S.C.O.P.E. score by one way ANOVA. Test-retest reliability was determined using intraclass correlation coefficient.

**Results:** Across all four tasks, experts (E) consistently outperformed intermediates (I), who, in turn, outperformed novices (N). These differences were statistically significant for all tasks. Mean normalized scores with 95% confidence intervals for each group on each task are as follows: **Scope Manipulation** [N-54 (26-82), I-90 (77-104), E-106 (93-118), p=0.0007], **Tool Targeting** [N-40 (24-55), I-79 (65-93), E-88 (72-105), p < 0.0001], **Loop Management** [N-51 (24-79), I-78 (57-99), E-101 (98-105), p=0.003], **Mucosal Inspection** [N-73 (53-92), I-87 (77-96), E-100 (91-108), p=0.013], and **Total S.C.O.P.E. Score** [N-218 (155-280), I-334 (296-372), E-395 (371-419), p<0.0001]. Initial Test - retest reliability for the expert Total S.C.O.P.E. score was respectable at 0.6.

**Conclusions:** A non-virtual reality, simulation based assessment tool has been created to evaluate the skills required to perform diagnostic endoscopy. Validity evidence shows that scores on these tasks can differentiate between groups expected to have different levels of technical skill. This model shows promise as a low technology tool for objective assessment or training of endoscopic skills. While larger scale validity evidence is needed, the S.C.O.P.E. model shows promise for potential incorporation into programs requiring objective assessment of endoscopic skills, like the Fundamentals of Endoscopic Surgery.
Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E.) : Identification of Key Metrics for Objective Assessment

Tiffany C. Cox MD*, Kristen Trinca MD*, Jonathan P. Pearl MD*$, E. Matthew Ritter MD*

*Norman M. Rich Department of Surgery, Uniformed Services University / Walter Reed National Military Medical Center, Bethesda MD
$Department of Surgery, University of Maryland School of Medicine

Background: Objective systems to assess and train flexible endoscopy skills are needed. The purpose of this study was to develop a series of structured tasks to objectively measure endoscopic skills in a non-computer based simulator, and to identify which metrics differentiate different levels of skill.

Methods: Twenty-seven subjects (16 experienced(E) (>140 colonoscopies), 11 novice (N) (<50 colonoscopies)) were evaluated. Each were read standard instructions for performing the four S.C.O.P.E. tasks (Scope Manipulation(SM), Tool Targeting (TT), Loop Management (LM), and Mucosal Inspection(MI)). All quantifiable variables that could influence performance were recorded including: completion time for each task, number of targets completed (SM and TT), successful loop reduction, maximum insertion length, use of position change and abdominal pressure, unintentional retroflexion (LM), number of polyps missed, incorrectly identified polyps, occurrence of rectal retroflexion, and distance of scope withdrawal during the allotted time (MI).

Results: All subjects performed the tasks using the standard instructions. No tasks were repeated due to device failure. Differences in mean completion times were significant for SM (E= 249 s, N= 422 s, p=0.002), TT (E= 278 s, N= 452 s, p=0.0006), and LM (E= 107 s, N= 493 s, p< 0.0001), but not for MI (E= 487 s, N= 497 s, p=0.88). Missed polyps were significantly higher for novices (E= 1.4, N= 3.3, p= 0.002) and insertion length was significantly shorter (E= 79 cm, N= 66 cm, p= 0.04). Rates of achieving loop reduction (E= 100%, N= 64%, OR= 19, p= 0.02) and correctly performing rectal retroflexion (E= 94%, N= 55%, OR=12.4, p= 0.03) were significantly better for experienced endoscopists. Differences in targets completed, maximum insertion length, incorrectly identified polyps, rates of unintended retroflexion, or use of position change or abdominal pressure were not significant.

Conclusions: It is feasible to administer the S.C.O.P.E. assessment using the standardized script in the allotted amount of time (<50 minutes). Key metrics are completion time for all tasks other than MI, number of missed polyps, achieving loop reduction, and performance of rectal retroflexion. These key metrics will be incorporated into a scoring system for S.C.O.P.E.
Validity Evidence for the Simulated Colonoscopy Objective Performance Evaluation (S.C.O.P.E.) Scoring System

Kristen Trinca MD*, Tiffany C. Cox MD*, Jonathan P. Pearl MD*$, E. Matthew Ritter MD*

*Norman M. Rich Department of Surgery, Uniformed Services University / Walter Reed National Military Medical Center, Bethesda MD

$Department of Surgery, University of Maryland School of Medicine

Background: Objective assessment of technical skills to quantify competency is a growing trend in surgical education. Low cost, objective systems to assess and train flexible endoscopy skills are needed. The purpose of this study was to evaluate the ability of the S.C.O.P.E. system to assess the skills required for diagnostic flexible endoscopy.

Methods: 38 subjects (11 practicing endoscopists, 6 non-endoscopic surgeons, 21 endoscopic trainees) were evaluated. Each subject was read a standard script with instructions for performing each of the four S.C.O.P.E. tasks (Scope Manipulation(SM), Tool Targeting (TT), Loop Management (LM), and Mucosal Inspection(MI)). Performance was measured using a scoring system incorporating previously identified key metrics and designed to reward precision and efficiency. Data were analyzed to assess the relationship between colonoscopy experience and performance on each of the tasks and the overall score. Performance differences between practicing endoscopists, non-endoscopic surgeons, and endoscopic trainees were also assessed for each task and the overall score.

Results: With respect to the total S.C.O.P.E. score, endoscopic trainee performance correlated significantly with total colonoscopy experience. (r= 0.61, p= 0.003) and colonoscopy experience in the last 12 months (r=0.63, p= 0.002). Similarly, significant differences were seen between practicing endoscopists, non-endoscopic surgeons and endoscopic trainees (p< 0.0001). When the 4 tasks were analyzed individually, each showed significant correlation with colonoscopy experience (SM: r= 0.44, p = 0.044; TT: r= 0.45, p= 0.04; LM: r= 0.47, p= 0.032; MI: r= 0.65, p= 0.001) and statistically significant differences in performance between the endoscopist groups, with the exception of the Mucosal Inspection task (SM p < 0.0001; TT: p= 0.002; LM: p= 0.0008; MI: p= 0.27).

Conclusions: Our study lends validity evidence to the construct that the S.C.O.P.E platform objectively assesses the technical skills required to perform diagnostic flexible endoscopy. Each task and the total score quantified improvement with increased colonoscopy experience and were generally able to differentiate between groups expected to have different endoscopic skills. Though further validity evidence is needed, S.C.O.P.E. shows promise as a tool to objectively assess endoscopic technical skill and as a platform for deliberate, proficiency based skills training.
SCHOOL OF MEDICINE

James R. Korndorffer, Jr, MD, FACS
Professor, Department of Surgery
Program Director, General Surgery Residency
Director, Tulane Center for Advanced Medical Simulation

October 18, 2012

E. Matthew Ritter, MD, FACS
Associate Professor
The Norman M. Rich Department of Surgery
The Uniformed Services University
4301 Jones Bridge Road
Bethesda, MD 20814

Dear Dr. Ritter,

I look forward to the opportunity to serve as an Associate-Investigator on your grant proposal "Development of a Proficiency-Based Skills Training Curriculum for the Fundamentals of Endoscopic Surgery," which you will submit to The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). I believe I can contribute toward the successful completion of your project.

I am currently Vice Chair and Professor of Surgery at Tulane University in New Orleans, LA. I have a Masters in Health Professions Education and my area of research focus is in surgical education and the use of simulation to advance surgical education. In this area of research, I have over 70 publications/presentation, including several from assisting with past SAGES grants. This study is of particular interest to me as my role as Program director of the Surgical Residency because I believe there is a significant need for a non-computer based endoscopy surgical simulator. I would be glad to lend my experience in using simulated gastric models in my lab and could advise you in accomplishing your research objectives. Since I am an employee of the Tulane University, and my effort will be less than 5%, I do not request salary support from this study.

Your proposed study will help us better understand the complex learning processes involved in teaching endoscopic surgery. I believe this research will allow us to better teach our
men and women in the Uniformed Services and in the civilian environment as well. I wish you the best of luck with your proposal.

Sincerely,

[Signature]

James R Korndorffer Jr MD MHPE FACS
Professor and Vice Chair, Tulane Department of Surgery
SCHOOL OF MEDICINE

Douglas P. Slakey, MD, MPH
Robert and Viola Labrano Chair of Surgery
Chairman, Department of Surgery

October 29, 2012

Lisa Straker
Proposal Manager-Team Lead
Office of Sponsored Programs
The Henry M. Jackson Foundation for the Advancement
Of Military Medicine, Inc.
6720-A Rockledge Drive, Suite 100
Bethesda, MD 20817

Dear Ms. Straker,

The Department of General Surgery and the Tulane Center For Advanced Simulation And Team Training (TCASTT), is pleased to support Dr. James R. Korndorffer in his role as Associate-Investigator on your grant proposal “Development of a Proficiency-Based Skills Training Curriculum for the Fundamentals of Endoscopic Surgery,” which you will submit to the The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). He will be a valuable investigator for your project.

The proposed research will be performed in the skills lab at TCASTT. There will be no charge for use of the skills lab or administrative space. Two full-time, salaried simulation technicians are available to assist with this project with no additional salary support required. This project is expected to consume less than 5% of Dr. Korndorffer’s work week. As such no salary support is required for his time.

I wish you the best of luck with your proposal.

Sincerely,

Douglas P. Slakey, MD, MPH
Robert and Viola Labrano Chair of Surgery
Chairman, Department of Surgery

1430 Tulane Ave., SL-22, New Orleans, LA 70112-2699 tel 504.988.2317 fax 504.988.1874 dslakey@tulane.edu
E. Mathew Ritter, MD, FACS  
Associate Professor  
The Norman M. Rich Department of Surgery  
The Uniformed Services University  
4301 Jones Bridge Road  
Bethesda, MD 20814  

October 18, 2012

Dear Dr. Ritter,

I will be glad to serve as an Associate-Investigator on your grant proposal "Development of a Proficiency-Based Skills Training Curriculum for the Fundamentals of Endoscopic Surgery," which you will submit to The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). I would be happy to contribute my expertise toward the successful completion of your project.

I am currently an Assistant Professor of Surgery at the University of Maryland School of Medicine. I have published extensively on endoscopy and currently serve in a leadership position at the Maryland Advanced Simulation, Training, Research, and Innovation (MASTRI) Center. This study is of particular interest to me because of my need for a low-cost and effective method for training students and residents flexible endoscopy. Since I am an employee of the Department of Veterans Affairs and the State of Maryland, and my effort will be less than 5%, I do not request salary support from this study.

Your proposed study will help us better understand the complex learning processes involved in teaching endoscopic surgery. I believe this research will allow us to better teach our men and women in the Uniformed Services and in the civilian environment as well. I wish you the best of luck with your proposal.

Sincerely,

Jonathan P. Pearl, MD  
Assistant Professor  
Department of Surgery  
University of Maryland School of Medicine
Dear Ms Straker,

The Division of General and Oncologic Surgery and the Maryland Advanced Simulation, Training, Research, and Innovation (MASTRI) Center at the University of Maryland School of Medicine is pleased to support Dr. Jonathan Pearl in his role as Associate-Investigator on your grant proposal “Development of a Proficiency-Based Skills Training Curriculum for the Fundamentals of Endoscopic Surgery,” which you will submit to The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). He will be a valuable investigator for your project.

The proposed research will be performed in the skills lab at the MASTRI Center. There will be no charge for use of the skills lab or administrative space. Two full-time, salaried simulation technicians are available to assist with this project: with no additional salary support required. This project is expected to consume less than 5% of Dr. Pearl’s work week. As such no salary support is required for his time.

I wish you the best of luck with your proposal.

Sincerely,

[Signature]

John A. Olson, Jr., MD, PhD
Campbell and Jeanette Plugge Professor of Surgery
Vice Chair, Department of Surgery
Chief, Division of General and Oncologic Surgery
University of Maryland
School of Medicine