UTHSCSA Innovative Teaching Grants Program

ITG Application

Title of ITG proposal: UTHSCSA Virtual Tutorial and Review Sessions for Medical Embry

Names and titles of project director and principle collaborators:

Project Director:

Name: Dr. Kristine S. Vogel

Title: Assistant Professor

Department & Division: Cellular and Structural Biology

E-Mail: vogelk@uthscsa.edu

Campus phone number: 567-0259

Collaborators

Name: Dr. M.A. Manwell-Jackson

Title: Educational Development Specialist

Department & Division: Academic Information Services

E-Mail: manwell@uthscsa.edu

Campus phone number:

Name: Dr. Linda Johnson

Title: Associate Professor

Department & Division: Cellular and Structural Biology

E-Mail: johnsonly@uthscsa.edu

Campus phone number:

Name:

Title:

Department & Division:

E-Mail:

Campus phone number:

ITG Proposal Synopsis

Project Title: UTHSCSA Virtual Tutorial and Review Sessions for Medical Embryology

What is the educational problem or need that is addressed by this project? {50 words}

Currently, there is little formal tutoring or review available to MS1 for embryology, an anatomical discipline which is often perceived as unfamiliar or difficult. This project will provide online tutorial sessions using UTHSCSA Virtual, in which the first-year medical students can obtain assistance with understanding embryology lectures and concepts.

What do you propose to do? (briefly describe what you will develop – E.g., what is the product or outcome that will be produced?) {50 words}

I propose to generate a virtual office/laboratory, in which I can store images to be used to discuss and review concepts in human embryology with MS1 enrolled in CSBL1010. I will use these resources to present 8 two-hour virtual tutorial sessions each year, coordinated with the embryology lectures in CSBL1010.

What type(s) and numbers of students will directly benefit from this project?

This project is directed at first-year medical students (MS1) enrolled in Medical Gross Anatomy and Embryology (CSBL1010). Approximately 10% of the class (20-25 students) is expected to seek assistance in the virtual tutorials ("participants"); all MS1 (210-220 students) will have access to transcripts of the sessions through UTHSCSA Virtual.

How will you evaluate the effectiveness of this project? {50 words}

UTHSCSA Virtual generates transcripts that can be used to monitor participation, and to assess the types of questions asked by the participants. Project effectiveness will be evaluated by comparing MS1 scores on embryology questions from exams given prior to (2005, 2006) and following (2007, 2008) the implementation of virtual tutorials.

Total amount of funding requested: $2,100.00

Project Approval by Department Chair:

Name: Dr. Christi Walter (walter@uthscsa.edu)

Department: Cellular and Structural Biology

Signature: _____ **Date:** _____

UTHSCSA Innovative Teaching Grants

ITG Proposal

Your application is expected to answer each of the six questions below. Please read the review criteria on page 6.

1. **Why should this project be implemented?** Discuss the problem, need or deficiency that will be addressed by this project and discuss why it is important to resolve this problem.

2. **What will be developed or implemented?** Describe the product or outcome.

3. **What objective(s) do you hope to achieve by implementing this project?**

4. **What tasks will be performed to complete the project and who will perform each of these tasks?** Describe the plan / methods for completing the work.

5. **How will you evaluate the effectiveness of this project?** Describe how you will evaluate whether or not the project objectives were achieved.

6. **What is your plan for continuation of the project after ITG funding support concludes?**

Other:

[ ] Complete the project budget.

[ ] Develop a logic model for your proposal (example of logic model provided.

[ ] Attach a 2 page biographical sketch of the Project Director.

[ ] Schedule a pre-submission consultation meeting with the ITG Coordinator.

UTHSCSA Innovative Teaching Grants
Budget Request

Project Director: Dr. Kristine S. Vogel

Title of Proposal: UTHSCSA Virtual Tutorial and Review Sessions for Medical Embryology

		Funds Requested
1. Consumable Supplies (Itemize below)	$	0.00
2. Equipment (Itemize below)	$	0.00
3. Hourly Rate Services (such as software programming) Must be calculated at an hourly rate. **Example:** 30 hrs programming @ $30/hr = $900	$	1,600.00
4. Other expenses (Itemize precisely)	$	500.00
TOTAL	**$**	2,100.00

Itemize Expense Items

Consumable Supplies	Equipment	Hourly Rate Services	Other Expenses
		1. 20 hours consulting, AIS/ERD Instructional Designer, @$60/hr = $1200 2. 20 hours exam data analysis, Masters Anatomy student or MS4, @$20/hr = $400	"Build" virtual office/laboratory for embryology tutorials, graphics design (UTHSCSA Virtual) $500

Travel and equipment: Budget requests to support travel for presentations at meetings related to an ITG project must be justified in the application. If the grant is funded, travel expenses may not exceed 10% of the total award. If the project budget includes funds for purchasing equipment, the applicant must document that such equipment is not available or accessible at The UTHSCSA.

Define the target population: Who will your program serve? *Be specific*: If age range, SES, geographic location are important, then specify them.	What are the theoretical assumptions you are making about how your program will work? What assumptions are you making regarding: 1) participants? 2) environment? 3) staff?	Resources: What resources does the program have available to achieve the program objectives/ goals? Constraints: What obstacles or challenges might there be? Example: Legal or regulatory constraints	These are the services/interventions that a program provides to fulfill its goals. Activities lead to outputs and are directly related to outcomes.	Outputs are the products of a program's activities such as the number of classes held, the number of home visits made, the number of people attending/completing classes, etc.	Outcomes are the benefits for participants during, or after their participation in your program. Outcomes may be related to, knowledge, skills, attitudes, values, behavior or status. There are usually *short-term*, *intermediate*, and *long-term* outcomes.	Outcome indicators Are the observable, measurable characteristics or changes that result represent the achievement of an outcome.

Program Logic Model

UTHSCSA Virtual Tutorial and Review Sessions for Medical Embryology

Program Goal:

TARGET POPULATION	ASSUMPTIONS	INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES	OUTCOME INDICATORS
MS1 students enrolled in Medical Gross Anatomy and Embryology (CSBL 1010)	Participants (MS1 students): Many students have had no formal undergraduate course in developmental biology or embryology as background; if students have taken undergraduate developmental biology, the emphasis of the course(s) was molecular, rather than anatomical and teratological. Many students perceive the concepts of human embryology (3-dimensional aspects, morphogenetic processes, stage-dependent changes in the names for structures, developmental anomalies) to be especially difficult and overwhelming. At least 10% of the MS1 class (approximately 20-25 students) would regularly attend virtual embryology tutorials, either from university or home computers. Environment: There are very few formal mechanisms through which first-year medical students can receive tutoring and review specific for human embryology. UTHSCSA Virtual will be accessible and user-friendly for the students who attend the online review sessions; those students who cannot attend will have access to transcripts from the sessions. Staff: The project director will be able to find and present visual resources for understanding	Resources: UTHSCSA Virtual (https://uthscsavirtual.uthscsa.edu/smmk/top/basicInfo), powered by the Numedeon Interactive Community Engine (http://www.numedeon.com/smmk/frontOffice/nice) Project Director, Dr. Kris Vogel: 5 years of experience teaching in the Medical Gross Anatomy and Embryology course at UTHSCSA, developed and directed course in Vertebrate Developmental Biology for graduate students, background and research in comparative embryology and molecular developmental biology Textbook: The Developing Human: Clinically Oriented Embryology K.L. Moore and T.V.N. Persaud Course Director for CSBL 1010, Dr. Linda Johnson-current Chair of the Medical School Curriculum Committee; USMLE experience UTHSCSA Virtual Consultant, Dr. M.A. Manwell-Jackson-Educational Research and Development Constraints: Visual resources accessible for teaching human embryology are	1. Generate dedicated virtual office/laboratory, for medical embryology tutorials, with identifying graphics in UTHSCSA Virtual. 2. Assemble visual resources (images, animations, PowerPoint slides from lectures) required for tutorial sessions, corresponding with embryology lectures in CSBL1010 course. 3. Compose fact sheet for use of/access to UTHSCSA Virtual, and provide schedule for virtual embryology tutorial sessions. 4. Respond to student questions and review lecture material in 8 two-hour sessions. UTHSCSA Virtual automatically generates transcripts. 5. At the end of the CSBL1010 course (Spring 2007, Spring 2008), MS1 scores on embryology questions will be compared to scores recorded for the two previous years (2005, 2006). 6. Using the UTHSCSA Virtual transcripts, and in collaboration with other embryology lecturers, identify conceptual	1. Eight two-hour virtual tutorial/review sessions, corresponding to the 15 embryology lectures, throughout the CSBL course. More sessions may be added according to student demand. 2. Transcripts of virtual tutorial sessions e-mailed to participants, and posted on Blackboard for non-participants. 3. Assembly, discussion, and assessment of online resources available for learning and visualizing human embryology. 4. Novel application of UTHSCSA Virtual and Numedeon Interactive Community Engine software to create interactive virtual tutorials for preclinical medical education.	Short-term: Address questions, points of confusion, clinical relevance, and gross anatomy correlates for the embryology material presented in CSBL 1010 lectures Serve as review sessions to focus on key learning objectives and concepts in embryology Intermediate: Help students achieve a comfort level with basic concepts in human embryology Long-term: Contribute to the medical student's ability to apply basic embryology concepts and knowledge to clinical situations in obstetrics and pediatrics	Short-term: Comparison of MS1 scores on embryology question in the combined exams before (Spring 2005, 2006) and after (Spring 2007, 2008) virtual tutorials are implemented. Comparisons of scores could also begin after the first exam (Fall 2006). Intermediate: Analysis of transcripts from sessions by Project Director and CSBL 1010 Course Director will lead to improved embryology teaching methods and identification of additional visual resources. Long-term: Publication of article(s) describing methods and outcomes for the UTHSCSA Virtual medical embryology tutorials. Adaptation of UTHSCSA Virtual tutorials for teaching other anatomical disciplines (e.g. gross anatomy, medical neuroscience). Development of novel visual resources for human embryology, based on needs/gaps identified from virtual tutorials.

Review Criteria for ITG Proposals

ITG proposals will be evaluated in relation to the applicants' responses to the areas below. A pre-submission meeting with the ITG Coordinator is required.

1. **Description and justification of the problem, need or deficiency**
   Why should this project be implemented? What is the problem, need or deficiency that will be addressed by this project? And why is it important to address this problem.

2. **Uniqueness of the project**
   What will be developed or implemented and, importantly, why is this approach innovative and likely to enhance students' learning or the quality of their educational experience?

3. **Potential for impact**
   What objective(s) do you hope to achieve by implementing this project?

4. **Thoroughness of the work plan.**
   What tasks will be performed, how it will be done, and who will do the work?

5. **Appropriateness of the evaluation plan**
   Describe how you will evaluate whether or not the project objectives were achieved.

6. **Plan for continuation**
   What is the plan for continuation of the project after ITG funding concludes?

7. **Development of a Logic Model**
   The logic model is a tool that will provide assistance in the planning and implementation phase of the project.

8. **Pre-submission meeting with the ITG Coordinator**
   The ITG Coordinator will certify that the meeting occurred.

ITG Application Template

Please complete each section of the application. Please type.

1. Why should this project be implemented? Discuss the problem, need or deficiency that will be addressed by this project and discuss why it is important to resolve this problem.

Carlson (2002) has reviewed many of the reasons for studying embryology as part of the medical curriculum, including understanding the genesis of common birth defects, identifying the origins of the gross anatomical patterns and organization of the body, and understanding advances in reproductive and embryo technologies. CSBL1010 includes 15 hours of embryology lectures, coordinated with lectures and dissections for related adult structures in gross anatomy; the median number of course hours devoted to embryology in US medical schools is 14, and 64% of schools teach embryology in conjunction with gross anatomy, as does UTHSCSA (Drake et al., 2002). Many first-year medical students had no formal undergraduate developmental biology course; for those students who received embryology instruction as undergraduates, the emphasis of the course was usually molecular, rather than anatomical or medical. Although there are opportunities to receive tutoring and review sessions for the other anatomical disciplines (gross anatomy, histology, neuroscience), very few such opportunities exist for the human embryology component of CSBL1010. This proposal describes an attempt to use a unique online resource, UTHSCSA Virtual, to address this issue.

References Cited

1. Carlson BM (2002). Embryology in the medical curriculum. Anat. Rec. (New Anat.) 269:89-98.
2. Drake RL, Lowrie DJ, Prewitt CM (2002) Survey of gross anatomy, microscopic anatomy, neuroscience, and embryology courses in medical school curricula in the United States. Anat Rec. (New Anat.)269:118-122.

2. What outcome(s) do you hope to achieve by implementing this project?

The short-term goal of this project is to provide an accessible online format in which first-year medical students can ask questions and resolve confusions about human embryology concepts presented in lectures and in the textbook. The intermediate/long-term outcomes are to help medical students achieve a comfort level with basic concepts in embryology that will serve both to improve performance on the USMLE Step 1, and to contribute to their ability to apply these concepts in clinical situations.

3. What will be developed or implemented? Describe the products or outcomes. Examples: web-based curriculum, CD-ROM, teacher training programs.

A dedicated office or embryology "laboratory" will be created in UTHSCSA Virtual, and the relevant images, animations, and PowerPoint lectures will be added to virtual shelves and filing cabinets for easy access. Initially, 8 virtual tutorial sessions will be generated, to correspond with the 15 medical embryology lectures. The sessions will also include a review component, and transcripts of the sessions will be generated by UTHSCSA Virtual, and will be available both to participants and non-participants. Additional sessions may be presented, depending on student participation and demand.

4. Methods: What tasks will be performed to complete the project and who will perform these tasks? Describe the plan / methods for completing the work.

A) Assemble images and figures from lectures, textbook, and other sources required for each tutorial session. Review material from the lectures and notes presented by other instructors in the course in preparation for each online session; identify and discuss potential problem areas for the students with these instructors. (K. Vogel) B) Generate virtual office/laboratory in which the tutorials will be held. Generate graphics to identify the virtual space with medical embryology, and to "anchor" the students (UTHSCSA Virtual Consultant and staff) C) Store embryology diagrams and animations as files in the virtual office/laboratory for easy access and display during the tutorials. (K. Vogel and UTHSCSA Virtual Consultant) D) Organize and present at least 8 virtual embryology tutorial/review sessions, corresponding to the 15 human embryology lectures in CSBL1010, throughout the 2006/2007, and 2007/2008 courses. (K. Vogel) E) Assist MS1 with log-ins, passwords, transcripts of sessions; trouble-shooting (UTHSCSA Virtual Consultant) F) Assess efficacy and accuracy of virtual tutorial sessions from transcripts, and identify conceptual problem areas (K. Vogel and L. Johnson) G) Compare MS1 scores on embryology questions prior to (2005, 2006) and following (2007, 2008) implementation of virtual embryology tutorials (Masters student in Anatomy or MS4)

5. How will you evaluate the effectiveness of this project? Describe how you will evaluate whether or not the project objectives were achieved.

UTHSCSA Virtual has the capacity to generate transcripts of the sessions, with a record of the participants and their questions; all of the first year medical students will have access. Additionally, these transcripts will serve as documentation of the sessions, and as a basis for the Project Director to receive input and critiques of teaching methods/approaches. At the end of the CSBL1010 course (2007, 2008), the student scores for the embryology questions (retrieved from the combined exams) will be compared to the scores on this component from the previous two years (2005, 2006).

6. What is your plan for continuation of the project after ITG funding support concludes?

If successful and well-attended, the virtual human embryology tutorials and review sessions will be continued each year. Moreover, the questions asked by the MS1 in the virtual embryology tutorials should allow me to identify conceptual "problem areas"; I can then use this information to obtain expertise and funding to develop solutions (animations, diagrams, other visual aids or software). Ultimately, I would like to design and produce a DVD presentation containing clay model representations of complex events in human morphogenesis (gastrulation, face and pharyngeal arch development, heart development, midgut rotation); ideally this would be "stop-action", rather than continuous animation, with voice-over and clear labeling of structures. Over the 24 months of the project, and with the help of educational research consultants, I plan to identify additional methods to assess and measure outcomes, such that the results can be published in a journal such as The Anatomical Record. I also hope to expand the UTHSCSA Virtual "tutorial application" to the medical neuroscience course, in particular to address questions about structures in brain sections and pathways.

Project Director biosketch:

Vogel, Kristine S. POSITION TITLE Assistant Professor

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)
INSTITUTION AND LOCATION DEGREE YEAR(s) FIELD OF STUDY
Rice University, Houston, TX B.A. 1983 Biology/Anthropology
University of Oregon, Eugene, OR Ph.D. 1988 Developmental Biology
St. George's Hosp. Med. School, London, UK postdoc 1989-1991 Dev. Neurobiology
University of Oregon, Eugene, OR postdoc 1991-1993 Dev. Neurobiology
UT Southwestern Medical Center, Dallas TX postdoc 1993-1997 Cancer Biology

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.
1983-1988 Graduate Research and Teaching Fellow, Institute of Neuroscience, University of Oregon, Eugene, OR (Dr. James A. Weston)
1989-1991 Postdoctoral Research Fellow, Department of Anatomy, St. George's Hospital Medical School, London, UK (Dr. Alun M. Davies)
1991-1993 Postdoctoral Research Fellow, Institute of Neuroscience, University of Oregon (Dr. James A. Weston)
1993-1994 Research Associate, Molecular Embryology Section, Mammalian Genetics Laboratory, NCI-Frederick Cancer Research and Development Center, Frederick, MD (Dr. Luis F. Parada)
1994-1995 Research Associate, Center for Developmental Biology, University of Texas Southwestern Medical Center, Dallas, TX (Dr. Luis F. Parada)
1995-1997 Research Assistant Professor, Center for Developmental Biology, UTSWMC
1997-2000 Assistant Professor, Department of Cell Biology and Anatomy, Louisiana State University Medical Center, New Orleans, LA
2000-present Assistant Professor, Department of Cellular and Structural Biology, University of Texas Health Science Center at San Antonio, San Antonio, TX

Honors and Awards
1983 Magna Cum Laude, Rice University (B.A. Biology, B.A. Anthropology)
1983 Phi Beta Kappa
1983-1986 NSF Predoctoral Research Fellowship
1989-1991 NIH NRSA Postdoctoral Fellowship, Individual Award
1990-1991 British-American Research Fellowship, American Heart Association
1994 National Neurofibromatosis Foundation Young Investigator Award

B. Selected peer-reviewed publications (in chronological order). Do not include publications submitted or in preparation.
1.Vogel, K.S., and Weston, J.A. (1988). A subpopulation of cultured avian neural crest cells has transient neurogenic potential. Neuron 1, 569-577.
2.Vogel, K.S., and Weston, J.A. (1990). The sympathoadrenal lineage in avian embryos. I. Adrenal chromaffin cells lose neuronal traits during embryogenesis. Dev. Biol. 139, 1-12.
3.Vogel, K.S., and Weston, J.A. (1990). The sympathoadrenal lineage in avian embryos. II. Effects of glucocorticoids on cultured neural crest cells. Dev. Biol. 139, 13-23.
4.Davies, A.M. and Vogel, K.S. (1991) Developmental programmes of growth and survival in early sensory neurones. Phil. Trans. Royal Soc. 31, 259-262.
5.Vogel, K.S., and Davies, A.M. (1991). The duration of neurotrophic factor-independence in avian cranial sensory neurons is matched to the time course of innervation. Neuron 7, 819-830.
6.Wright, E.M., Vogel, K.S., and Davies, A.M. (1992) Neurotrophic factors promote the maturation of developing sensory neurons before they become dependent on these factors for survival. Neuron 9, 139-150.
7.Vogel, K.S., and Davies, A.M. (1993) Heterotopic transplantation of presumptive placodal ectoderm changes the fate of sensory neuron precursors. Development 119, 263-276.
8.Brannan, C.I., Perkins, A.S., Vogel, K.S., Ratner, N., Nordlund, M.L., Reid, S.W., Buchberg, A.M., Jenkins, N.A., Parada, L.F., and Copeland, N.G. (1994). Targeted disruption of the neurofibromatosis type 1 gene leads to developmental abnormalities in heart and various neural crest-derived tissues. Genes Dev. 8, 1019-1029.
9.Tessarollo, L., Vogel, K.S., Palko, M.E., Reid, S.W., and Parada, L.F. (1994). Targeted mutation in the neurotrophin-3 gene results in loss of muscle sensory neurons. Proc. Natl. Acad. Sci. USA 91, 11844-11848.
10.Vogel, K.S., Brannan, C.I., Jenkins, N.A., Copeland, N.G., and Parada, L.F. (1995). Loss of neurofibromin results in neurotrophin-independent survival of embryonic sensory and sympathetic neurons. Cell 82, 733-742.
11.Vogel, K.S. and Parada, L.F. (1998). Sympathetic neuron survival and proliferation are prolonged by loss of p53 and neurofibromin. Molecular and Cellular Neuroscience 11, 19-28.