Summer Student Research Program
Project Description

FACULTY SPONSOR'S NAME AND DEGREE: James K. Liu, MD
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PROJECT TITLE (200 Characters max):

1. Surgical Outcomes After Endoscopic Endonasal Skull Base Surgery in the Pediatric Population
2. Microscopic Vs. Endoscopic Resection of Tuberculum Sellae Meningiomas
3. Outcomes After Microsurgical Resection of Sphenoid Wing Meningiomas

HYPOTHESIS:
The use of skull base techniques, either via endoscopic endonasal approaches or standard transcranial approaches, are useful for removal of deep seated intracranial tumors at the skull base, and can be performed safely with low rates of morbidity and mortality. In this study, we assess the surgical outcomes after skull base surgery (endoscopic vs. microscopic techniques) for removal of intracranial tumors at the skull base.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

Student would work closely with attending neurosurgeon with focus on skull base surgery/brain tumor clinical research. Student would be required to formulate hypothesis, formulate a scientific question and subsequently design a clinical study in an attempt to answer the question, perform data collection from patient charts and records, generation of databases, data and statistical analysis. Past participants have been successful in writing of scientific abstracts and manuscripts for submission to major national meetings and scientific journals for ultimate publication. Additional portions of the project may require anatomical cadaveric dissections and generation of quality publication level photographs, and editing of surgical/operative videos. Knowledge of adobe photoshop, some basic editing, video editing may be helpful.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

89. **Liu JK**, Christiano LD, Patel SK, Eloy JA. Surgical nuances for removal of retrochiasmatic craniopharyngioma via the endoscopic endonasal extended transsphenoidal transplanum transtuberculum approach. **Neurosurg Focus** 30 (4):E14, 2011 (**selected for cover illustration**)

90. **Liu JK**, Christiano LD, Patel SK, Tubbs, RS, Eloy JA. Surgical Nuances for Removal of Tuberculum Sellae Meningiomas with Optic Canal Involvement Using the Endoscopic Endonasal Extended Transsphenoidal Transplanum Transtuberculum Approach. **Neurosurg Focus** 30(5):E2, 2011

91. **Liu JK**, Christiano LD, Patel SK, Tubbs, RS, Eloy JA. Surgical Nuances for Removal of Olfactory Groove Meningiomas Using the Endoscopic Endonasal Transcribriform Approach. **Neurosurg Focus** 30(5):E3, 2011 (**selected for cover illustration**)

97. **Liu JK**, Patel SK, Gillespie DL, Whang K, Couldwell WT. R-flurbiprofen, a novel nonsteroidal anti-inflammatory drug, decreases cell proliferation and induces apoptosis in pituitary adenoma cells in vitro. **J Neurooncol** 106:561-569, 2012 [Sept 22, 2011 Epub ahead of print]

98. Patel SK, Tomei KL, Christiano LD, Baisre A, **Liu JK**. Complete regression of papillary tumor of the pineal region after radiation therapy: case report and review of the literature. **J Neurooncol** Nov 16, 2011 (Epub ahead of print)

102. **Liu JK**, Eloy JA. Endoscopic endonasal transplanum transtuberculum approach for resection of retrochiasmatic craniopharyngioma. **Neurosurg Focus (Suppl) 32(1):**Video 2, 2012

103. **Liu JK**, Eloy JA. Endoscopic endonasal transcribriform approach for resection of anterior skull base olfactory schwannoma. **Neurosurg Focus (Suppl) 32(1):**Video 3, 2012

104. **Liu JK**, Eloy JA. Modified one-piece extended transbasal approach for resection of giant anterior skull base sinonasal teratocarcinosarcoma. **Neurosurg Focus (Suppl) 32(1):**Video 4, 2012

105. Friedel ME, Li S, Langer PD, **Liu JK**, Eloy JA. Modified hemi-lothrop procedure for supraorbital ethmoid lesion access. **Laryngocope** Nov 7, 2011 [Epub ahead of print]

106. Patel SK, Christiano LD, Eloy JA, **Liu JK**. Delayed postoperative pituitary apoplexy after endoscopic transsphenoidal resection of a giant pituitary macroadenoma. **J Clin Neurosci** (accepted for publication, in press)

107. Choudhry OJ, Choudhry A, Patel SK, Baisre A, Eloy JA, **Liu JK**. Giant suprasellar Rathke's cleft cyst mimicking craniopharyngioma: implications for a spectrum of cystic epithelial lesions of ectodermal origin. **Central Eur Neurosurg** (accepted for publication, in press)

108. Eloy JA, Kuperan AB, Choudhry OJ, Harirchian S, **Liu JK.** Efficacy of the pedicled nasoseptal without cerebrospinal fluid diversion for repair of skull base defects: incidence of postoperative CSF leaks. **Int Forum Allergy Rhinol** (accepted for publication)

109. Eloy JA, Choudhry O, Friedel ME, Kuperan AB, **Liu JK**. Endoscopic nasoseptal flap repair of skull base defects: is addition of a dural sealant necessary? **Otolaryngol Head Neck Surg** (accepted for publication, in press)

IS THIS PROJECT SUPPORTED BY EXTRAMURAL FUNDS?
Yes ☐ or No ☒
(IF YES, PLEASE SUPPLY THE GRANTING AGENCY'S NAME)

THIS PROJECT IS: ☒Clinical ☐Laboratory ☐ Behavioral ☐ Other

THIS PROJECT IS CANCER-RELATED☒
Please explain Cancer relevance
Study will be focused on brain tumors, skull base tumors, both malignant and benign

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED☐
Please explain Heart, Lung, Blood relevance

THIS PROJECT EMPLOYS RADIOISOTOPES☐

THIS PROJECT INVOLVES THE USE OF ANIMALS ☐
PENDING ☐ APPROVED ☐ IACUC PROTOCOL #

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS ☐

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Project Description

PENDING ☐ **APPROVED** ☐ **IRB PROTOCOL # M**

THIS PROJECT IS SUITABLE FOR:

UNDERGRADUATE STUDENTS ☐ ENTERING FRESHMAN ☐
SOPHMORES ☐ ALL STUDENTS ☒ (however preference will be given to students who have just finished first year of medical school)

THIS PROJECT IS WORK-STUDY: **Yes** ☐ **or** **No** ☒ **(not sure)**

THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR FOR INTERESTED VOLUNTEERS?: **Yes** ☒ **or** **No** ☐

WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

The student will learn how to perform scientific analysis for clinical neurosurgical research, learn neurosurgical operative approaches, disease processes, anatomical structures, radiological findings, clinical presentation of patients with neurosurgical disease. In addition they will learn how to properly submit and author a scientific abstract and manuscript for publication.