

## DEAN'S SUMMER STUDENT RESEARCH FELLOWSHIP- SUMMER 2008

### SCHOOL OF MEDICINE- Mentor Application

(Return the completed application via Email to Buanita Benson [bsbenson@dor.umsmed.edu](mailto:bsbenson@dor.umsmed.edu) in the Office of Research by **January 2, 2008**. If you prefer to have your application available to the students before winter holiday, submit it to [bsbenson@dor.umsmed.edu](mailto:bsbenson@dor.umsmed.edu) by **December 10, 2007**

**Project Title:** *Molecular Genetics of Van den Ende-Gupta Syndrome*

**Mentor (name, email , phone number) and Department:**

Jun Zhang, [jzhang@umsmed.edu](mailto:jzhang@umsmed.edu), 4-6490, Neurosurgery

**Number of Students Previously Supervised by Preceptor:**

" " Papers:

" " Abstracts:

" " Presentations: 1). *Van den Ende-Gupta Syndrome: Expanding the Phenotype Investigating Molecular Genetics*, Chris Carr M-2, MSRP student.

2). *The Epidemiology of Congenital Hydrocephalus*, Matthew VanLandingham M-2, MSRP student.

3). *Congenital Hydrocephalus at The University of Mississippi Medical Center: a ten year review*

Matthew VanLandingham M-2, MSRP student. **The 1st place award in original research in 2007 ACP (American College of Physician) research competition**

**Funding Source for Work:** No

**Would you be able to support a summer student's salary without the Dean's Grant?** No

**IRB Approval (Clinical Research) Obtained:** Yes

**IACUC Approval (Research with Animals) Obtained:** Yes

Briefly describe your project so the student can clearly understand the work that will be undertaken and the rationale for doing the research. Do **not** exceed this page. You should have the laboratory or clinical resources to support the proposed work. The project should have a reasonable chance of producing tangible results during the 10-week length of the fellowship.

**Statement of Problem and Background:**

**Van den Ende-Gupta Syndrome (VDEGS) is a hereditary disorder with craniofacial and skeletal manifestations. The clinical features include blepharophimosis, shortened palpebral fissures, flat nasal bridge, hypoplastic orbital rim, malar hypoplasia, beaked nose, crumpled ears, arachno, camptodactyly, knee and elbow contractures, slender ribs, phalanges, and metacarpals. The basic clinical phenotype resembles other fibrillinopathies, such as Marfan syndrome, congenital contractural arachnodactyly.**

VDEGS is a very rare genetic disorder with autosomal recessive trait. Up to date, only 11 cases have been identified worldwide. We have an unique opportunity here to perform a genetic study on this human condition. Last year we got two VDEGS families with 2 VDEGS patients in each family (one identified at UMC, one sent from our collaborator from UCLA). This year we are going to get another VDEGS family In March from California. Therefore, we will have 30% of total families in the world to carry out the genetic research. DNA and RNA have been extracted. And gene expression microarray, array comparative genomic hybridization (aCGH) have been performed. Whole-genome linkage analysis will be performed to identify the genetic location of this human condition.

**Methods and Data Analysis:**

Cell lines obtained from 4 VDEGS patients in two families. DNA and RNA have been extracted. When third family blood samples arrive in UMC, DNA and RNA will be extracted as well. Whole genome-linkage analysis will be performed to identify responsible genetic loci. When genetic locus is identified, DNA mutational screening will be performed to define VDEGS gene, and nature of mutation. And finally, molecular etiology will be studied to define the function of VDEGS gene.

**Anticipated Outcome(s):****Significance of the Work:**

Through this project, we will localize and eventually identify the genetic defect that causes VDEGS. The finding will help us to decipher molecular genetics underlying VDEGS, and increase our understanding of biochemical processes, when disturbed in VDEGS, lead to the molecular and cellular pathogenesis of this disorder.