

Title: Hypospadias Etiology: Genetic Analysis

IRB# 2010-013

Principal Investigator: Lawrence Baskin, MD

Synopsis:

Hypospadias are characterized by a defect in the development of the ventral aspect of the penis and an ectopic opening on the urethral meatus. This congenital malformation, often considered as a lack of virilization of male external genitalia, is the second most frequent genital malformation in newborn males after cryptorchidism. Its incidence ranges from 1/1000 to 1/100 with significant variations according to ethnic origin.

The molecular events required in the genitourinary tract for normal development of the external genitalia are just beginning to be elucidated. An etiology is identified in approximately 20% of hypospadias, mainly in severe forms, and the cause of the vast majority of hypospadias remains unknown. A multi-factorial explanation and the implication of genetic susceptibility and environment have been proposed for the development of hypospadias. We hypothesize that variations in genes that are involved in testicular differentiation, androgen biosynthesis and action, penile development, urethral patterning and structuring and estrogen activity may contribute to hypospadias risk in humans. The study will analyse several candidate genes in these biological pathways in hypospadias patient and control population to identify genetic variations associated with risk for hypospadias. The findings of this study will help better understand the etiology of hypospadias which may make it possible to develop therapies for better treatment specifically preventive strategies.