What is oxidative stress?

Every day, your body is exposed to and produces a wide range of reactive molecules. Many systems are in place to ensure these molecules are located in the proper place, are in the right amount, and act as they are intended. If these systems are overwhelmed or impaired, the reactive molecules can build up or end up where they are not meant to be. This can result in damage in the cells and structures in your body. The body’s inability to prevent the effects of excess of reactive molecules is called oxidative stress.

How does oxidative stress affect someone with PKU?

International clinics have seen greater oxidative stress in patients with PKU as compared to people without PKU. However, there is much we still don’t know about oxidative stress as it relates to PKU. We don’t know if what was seen in international clinics applies to patients being treated in the United States. We also don’t know how new treatments like BH₄ affect markers of oxidative stress. This study will begin to answer these questions.

Interested in Participating?

Please contact:
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Principal Investigator

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SINGH RESEARCH GROUP PRESENTS  
Department of Human Genetics  

RESEARCH OPPORTUNITY  
Phenylketonuria, Oxidative Stress, and BH₄  
A clinical study for responders and non-responders to BH₄ therapy
BH4 (also called Kuvan®) is a drug that is currently available to help lower the concentrations of phenylalanine in the blood of certain responsive patients with phenylketonuria (PKU). The chemical structure of the drug may allow it to work in different pathways. The purpose of this study is to look at the ability of BH4 to affect these other pathways. We will do this by seeing how the body reacts to a meal high in sugar and fat.

**Chemical structure of the drug BH4**

### Who Can Participate?

We are recruiting three different types of participants:

- **People who have PKU and responded** to the BH₄ therapy
- **People who have PKU and did not respond** to BH₄ therapy
- **People who do not have PKU**, but match the age, body mass index class, and gender of a PKU participant

### Purpose of the Study

Am I Eligible to Participate?

All participants must meet the following criteria:

- Are 10-45 years of age
- Do not smoke
- Are not pregnant or breastfeeding
- Are free from chronic disease or conditions (except PKU)
- Not currently taking any investigational drugs

There are additional criteria for each study group, outlined below.

**BH₄-Responsive PKU Participants**

- Have been diagnosed with PKU
- Are responsive to BH₄ therapy
- Have an active BH₄ prescription
- Be continuously using BH₄ for at least 6 months

**BH₄ Unresponsive PKU Participants**

- Have been diagnosed with PKU
- Did not respond to BH₄ therapy
- Did not have an adverse reaction to BH₄

**Unaffected Controls**

- Be within ±5 years of an enrolled PKU participant
- Match the gender of the participant for which they match in age
- Match the body mass index class (normal weight, overweight, obese) as the enrolled PKU participant for which you match in age and gender

### Where Will the Study Take Place?

Our research office is located in the Emory Human Genetics Clinic located at the 2165 North Decatur Road, Decatur, GA 30033. You may be consented and/or fill out questionnaires at this location.

All physical examinations and meal challenge study visits will be conducted at the Emory University Hospital Clinical Interactions Site located at 1364 Clifton Road, Atlanta, GA 30322.

**Participants will be compensated for their time**

### What Will be Asked of Me?

- Complete questionnaires about your demographics, health, and diet
- Attend a brief physical examination by a study team doctor
- Record what you eat for the 3 days prior to your study visit.
- Sit for meal challenge study visit(s) consisting of:
  - Testing how blood moves through your arm at two time points
  - Eating a provided meal low in phenylalanine
  - Having blood drawn every other hour for a period of 6 hours

**Additional inclusion/exclusion criteria may apply. Please contact study coordinator for more information.**