



Infant Vision



We are currently conducting research projects to investigate vision in infants, children and adults. We are looking for both term-born subjects and subjects with a history of premature birth. The studies are listed below.

If you are interested in participating in one of our studies or would like to learn more about them, please contact us.

[Term-born children & adults, 3 - 35 years old](#)

[Premature infants, 10 weeks old](#)

[Children and adults born preterm, 2-35 years old](#)

[Study #1](#): ages 2 to 18 years

[Study #2](#): ages 3 to 35 years

[Study #3](#): ages 8 to 25 years

[Term-born subjects, 3 - 35 years](#)

Comparison of ERGs recorded using skin electrodes and contact lens electrodes

In this study, we want to test people with normal eyesight to find out if using adhesive skin patches placed near the eyes to record the [electroretinogram](#) (ERG) works as well as the standard method that uses a contact lens placed on the surface of the eye. It is very difficult for some young children to tolerate the contact lens, so we would like to find another way to test their eyes.

We are recruiting people in good health who see well with or without glasses and are in three age groups:

- children (3-12 years)
- adolescents (13-18 years)
- adults (18-35 years)

Dilating drops, like those used routinely for eye exams, will be administered to enlarge the pupils. After the subject adapts to darkness for 30 minutes, we will record the [electroretinogram](#) (ERG) to evaluate retinal function. The children will be tested only with the skin electrodes. The adults and adolescents will be tested with the skin electrodes for one eye and the contact lens electrode for the other eye. Anesthetic drops will be placed in one eye and a contact lens electrode placed on the surface of that eye. We will then record the electrical response of the retina to a series of blue and red flashing lights.

For children, the only risk involved in this study is the momentary discomfort of the drops used to dilate the pupil. For adults and adolescents, the risks are the momentary discomfort of the dilating drops and the drops used to anesthetize the eye and the possibility of scraping (abrading) the surface of the eye with the contact electrode. In fact, with the precautions that we take, the risk of abrasion is very low.

Participation in this research will be of no direct benefit to you/your child, but we hope that the data obtained will help us better diagnose and understand future patients with eye problems.

The actual ERG test takes 15 to 30 minutes. The total time in the Ophthalmology Department is approximately 2 hours, including showing you the equipment, discussing the procedure and answering any questions. We will provide you with a token payment and a parking voucher for the Children's Hospital garage.

If you would like to participate, please [contact us](#).

Premature infants, 10 weeks old

Development of Vision and Refractive Errors in Children with a History of Retinopathy of Prematurity (ROP)

In this study, we are investigating the development of vision and refractive error in infants who were born prematurely.

Nearsightedness is a frequent problem among children who have been born early. We believe that the retina, which is affected by retinopathy of prematurity, governs whether the eye will grow to become nearsighted (myopic) or farsighted (hyperopic). Therefore, we

are conducting a study of retinal function of premature infants, some of whom had retinopathy of prematurity and others who had no retinopathy. We would like to follow each child with tests of retinal function and measurements for myopia or hyperopia starting at age 10 weeks post-term and continuing until age 3 years. We would like you to consider having your child participate in the project outlined below.

Baseline Examination at 10-weeks post term . For this examination, your child's vision will be checked with the [preferential looking test](#) (PL). Then dilating drops, like those used for their eye examination in the nursery, will be used. These drops are needed to obtain accurate measurements of the focus of the eye to determine if there is any myopia or hyperopia. It takes the drops about 30 minutes to work. During those 30 minutes we will ask you to wait with your child in a dark room. At the end of the 30 minutes, we will check your child's [dark adapted threshold](#) (DAT) by showing spots of dim light and determining the dimmest light that your child will look at reliably. This test measures retinal function in small patch of retina.

After this, we will check the function of the whole retina using either the full-field [electroretinogram](#) (ERG) or the [multifocal ERG](#) (mfERG). Anesthetic drops will be placed in one eye and a contact lens electrode placed on the surface of that eye. We will then record the electrical response of the retina to a series of blue and red flashing lights or flickering patterns.

Risks involved in this study are the momentary discomfort of the dilating and anesthetizing drops and the possibility of scraping (abrading) the surface of the eye with the contact electrode used for ERG recording. In fact, with the precautions that we take, the risk of abrasion is very low.

Typically the baseline visit, which includes the PL, DAT, and ERG, takes about 2 hours.

Follow-up Visits. After the baseline examination, follow-up visits will be every three to six months until the age of 3 years. These visits do not call for such extensive testing as at the baseline visit. At each follow-up visit, after your child has dark adapted for 30 minutes, we will perform the [dark adapted threshold](#) (DAT) test. Dilating drops are not needed. Every six months, the measurements for myopia or hyperopia will also be done; these measurements do require the use of eye drops. At age 3 years, we expect it will be possible to measure your child's vision by having him/her name symbols on a standard children's vision test.

Risks involved in the 6-month follow-up visits are the momentary discomfort of the dilating drops. The follow-up visits are expected to take about an hour.

You may discontinue participation in this project at any time, and you may also choose only those tests in which you would like to have your child participate. Any assistance you can provide is valuable and greatly appreciated.

The development of myopia and hyperopia and associated eye problems continue to be an important concern among children who are born early. The testing is not expected to be of any direct benefit to your child, but we hope that this study will result in a better understanding and better management of these problems.

We will provide you with a parking voucher for the Children's Hospital garage and a token payment for each visit.

If you would like to participate, please [contact us](#).

Children and adults who were born preterm, 2-35 years

Study #1

Night Vision in Children with a History of Retinopathy of Prematurity (ROP)

Ages: 2 to 18 years

In this study, we are investigating visual development in children who were born early. In our previous studies, we discovered subtle changes in vision and the function of the rod photoreceptors in the healthy eyes of children and teenagers who were born early and may have a history of retinopathy of prematurity. We want to find out more about this aspect of their vision because we think it will help us understand more exactly how prematurity can affect vision and the retina. Ultimately, we hope that this will lead to better treatment of children who develop eye problems at an early age.

In this study, the child's night vision will be tested using the [dark adapted threshold](#) (DAT) test to determine the dimmest light that he/she can reliably see. After 30 minutes of adapting to darkness, the DAT test will be performed with a series of six dim red backgrounds that illuminate the area around the test spot. From this test, we can assess how the night vision system adjusts, or adapts, to light.

No eye drops are needed for this study, and there are no risks involved. The testing is not expected to be of any direct benefit to your child. We are doing this testing because we believe it will give important new information about how the photoreceptors that work at low light levels, the rods, are working in the eye.

The entire session is expected to take about an hour and a half. We will provide you with a token payment and a parking voucher for the Children's Hospital garage.

If you would like to participate, please [contact us](#).

Preterm Children and Adults [Study #2](#): ages 3 to 35 years

Preterm Children and Adults [Study #3](#): ages 8 to 25 years

Study #2

Electroretinograms in Children and Adults with a History of ROP

Ages: 3 to 35 years

In this study, we are investigating the development of vision and the retina in children and adults who were born prematurely. In our previous studies, we discovered subtle changes in vision and the function of the rod photoreceptors in the healthy eyes of children and teenagers who were born early and may have a history of retinopathy of prematurity. We want to find out more about this aspect of their vision because we think it will help us understand more exactly how prematurity can affect vision and the retina.

Dilating drops, like those used routinely for eye exams, will be administered to enlarge the pupils. After the subject adapts to darkness for 30 minutes, we will record the [electroretinogram](#) (ERG) to evaluate retinal function. In 3 to 7 year olds, we will use adhesive skin patches placed near the eyes to record the ERG. In 8 to 35 year olds, anesthetic drops will be placed in one eye, and we will record the ERG using the standard method in which a contact lens is placed on the surface of the eye. The actual recording will take less than 30 minutes. Following the ERG test, a standard eye exam, including taking photographs of the retina using a digital camera, will be performed.

For children under 8 years of age, the only risk involved in this study is the momentary discomfort of the drops used to dilate the pupil. For older children and adults, the risks are the momentary discomfort of dilating drops and the drops used to anesthetize the eye and the possibility of scraping (abrading) the surface of the eye with the contact electrode. In fact, with the precautions that we take, the risk of abrasion is very low.

We are doing this testing because we believe it will give important new information about how the rod photoreceptors are working in the eye. We hope that this will ultimately lead to better treatment of children who develop eye problems at an early age. The testing is not expected to be of any direct benefit to you or your child.

The entire session is expected to take less than 2 hours. We will provide you with a token payment and a parking voucher for the Children's Hospital garage.

If you would like to participate, please [contact us](#).

Preterm Children and Adults [Study #1](#): ages 2 to 18 years

Preterm Children and Adults [Study #3](#): ages 8 to 25 years

Study #3

Multifocal ERGs in Children and Adults with a History of ROP

Ages: 8-25 years

In this study, we are investigating vision in children and adults who had mild, moderate or severe retinopathy of prematurity (ROP) when they were infants. Recent studies have shown that some people who had ROP as infants, even if the ROP was mild and resolved completely without treatment, have small alterations in the function of their retina. These changes may explain why many of them become nearsighted or have vision problems later in life. We will use the [multifocal ERG](#) (mfERG) to study the function of the central retina in subjects who had ROP.

Dilating drops, like those used routinely for eye exams, will be administered to enlarge the pupils. After the pupil has dilated, which takes about 30 minutes, anesthetic drops will be placed in one eye and a contact lens electrode placed on the surface of that eye. The subject will view a video screen and the retinal responses to flickering patches of light will be recorded.

Risks involved in this study are the momentary discomfort of dilating drops and the drops used to anesthetize the eye and the possibility of scraping (abrading) the surface of the eye with the contact electrode. In fact, with the precautions that we take, the risk of abrasion is very low.

Participation in this research will be of no direct benefit to you/your child, but we hope that the data obtained will lead to a better understanding of vision in children who had ROP as infants.

The entire session is expected to take less than 2 hours. The actual mfERG recording time is about 20-30 minutes. We will provide you with a token payment and a parking voucher for the Children's Hospital garage.

If you would like to participate, please [contact us](#).