This Q & A article is from BDSRA’s “Ask An Expert” Facebook Chat in the BDSRA Closed Facebook group for parents and caregivers.

\*Please note: the information contained in this material is intended to provide basic information to Batten families and caregivers. It is not intended to be, nor is it, medical advice for individual children. Parents and caregivers should consult the patient’s physician prior to changing medication, medical treatment or daily activities.

Featured Expert:

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1. Why are samples important to research?
   1. Why samples are important to research is a great way to start. We have some great tools for studying Batten disease that include different kinds of animal models. These have been really valuable. But we want to understand this disease and find treatments for the children affected by it. So studying the disease in human samples is critically important. Research in animals sometimes does not predict things in humans.
2. Are you doing any research on CLN3?
   1. Yes, we do CLN3 research in my laboratory and there are a number of other labs in the US and in other countries also working on CLN3, and we collaborate with many of them. We are using mouse and human cellular models to study CLN3 function and to identify candidate drugs that can modify the disease related features in these models.
3. Our child had a skin biopsy when we were first looking for a diagnosis. The said the cells never grew. They retested and said they didn't grow a second time. They didn't want to put him through another biopsy. Is there any scientific reason why the cells would not grow?
   1. This is a great question about skin biopsy. After the biopsy is taken, it is put in some liquid that helps keep the skin cells alive. The tube with the biopsy sample and the liquid then are transported to a laboratory where the sample is then put into a petri dish with some fresh liquid and put into an incubator. The cells sometimes don't survive the process of making it into the dish in the first place. Sometimes, the cells initially grow. If they have grown, vials of cells will be frozen so that they can be regrown at a later date. Unfortunately, sometimes they don't recover from the freezing process. It is hard to know exactly why the cells don't grow, since there are a number of possible scientific explanations for it. Oftentimes a fresh biopsy will be successful. I should also mention that the majority of skin biopsies do grow successfully, and most of the cell lines that are expanded from them do freeze and recover successfully. To the best of my knowledge, there is no difference in the success rates of cell line establishment from skin biopsies taken from affected Batten children, as compared to unaffected individuals.
4. During my child's workup, they didn't need to do a biopsy because they were able to see the vacuoles in her leukocytes from a blood sample with electron microscopy. Why do some children get biopsies instead?
   1. The vacuolated cells from a blood sample are usually strongly suggestive of CLN3, but are usually not present in other forms of Batten disease. The biopsies are used to look for a specific feature of Batten disease, which is the lysosomal storage material. This test is another helpful tool for clinicians to ultimately reach a diagnosis for the patient.
5. Would the vacuoles in blood cells be visible with regular light microscopy?
   1. That's a great question. Usually, the blood cells are mounted onto a slide and they are stained with a dye that is visible under a light microscope. The vacuoles are seen because the rest of the cell has a color, but the vacuoles do not.
6. The reason I ask is because the details of the vacuoles were not actually helpful in getting my daughter's diagnosis and they actually confused everybody for a while. Genetic testing gave us the diagnosis. So I was thinking that maybe the expensive and hard-to-interpret electron microscopy was not really necessary and it might have been simpler and cheaper just to look at the cells under a regular microscope.
   1. The genetic testing is really important, as you have pointed out for your daughter's case. Research supports the usefulness of the electron microscopy, but it also requires expert pathologists to view the data, and even then, it can sometimes be missed or misinterpreted. The genetic tests are unfortunately also imperfect sometimes. As we are learning more through genetic research, the changes identified in genetic analysis can sometimes be difficult to interpret as well, if they have never been seen before. Databases that catalog the changes identified, such as the one that is maintained by Dr. Sara Mole, are invaluable for interpretation of genetic data. This is one reason why participating in genetic research studies can be invaluable for the whole community and long into the future.
7. Do researchers share the samples that they receive and could you tell us a little about the samples that have been collected for the Batten biorepository?
   1. Yes, if the patient or parent/caregiver who signs what's called a 'consent form' for the sample they are donating to be used for research agrees to have their samples shared with other researchers, then they can and will be shared with other researchers who request them and who also have permission to do research on human samples. The samples are coded and no identifying information is given to the requesting scientist, so that the privacy of the patient is protected. The types of samples that are collected for research are usually blood or skin biopsies. Samples taken for clinical testing purposes can also sometimes be used for research if permission is given and if there is sample still available.
8. What kind of samples do researchers generally collect?
   1. The most common types of samples collected for research are blood or skin biopsies (these are also sometimes called a skin punch). But there are many other types of samples that would be useful as well. For example, urine or saliva might be collected for research. When a loved one passes, brain and other tissue samples are sometimes donated for research.