

Bardet Biedl Syndrome genetic testing

ASPER OPTHALMICS

Asper Ophthalmics is a division of Asper Biotech. Asper Biotech has developed a number of DNA testing applications during its operations, and since the scope of the business has been growing, we feel we need to focus on the most important areas of our business.

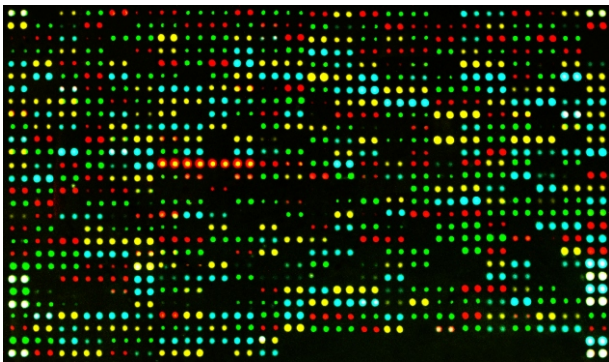
Together with our partners, Asper has developed a portfolio of ophthalmic DNA tests. This list continues to expand in coming years. Since ophthalmics has become a major part of our operations, and we see increasing potential in the future, Asper Ophthalmics was created.

Asper Ophthalmics combines the experience and reputation as a good partner and a high quality DNA testing company of Asper Biotech, as well as our increasing focus on ophthalmics. We wish to be the partner of choice for all those involved in ophthalmics genetics – research institutions, DNA testing centers, patient organizations, commercial entities.

THE CHIP

Bardet Biedl Syndrome (BBS) test has been established for screening 308 mutations from 14 genes: BBS1, BBS2, BBS3, BBS4, BBS5, BBS6, BBS7, BBS8, BBS9, BBS10, BBS12, PHF6, ALMS1, GNAS1.

Development and validation experiments have been performed in collaboration with our partners from Institute of Child Health (UK), John Hopkins University School of Medicine (USA), University of Vigo (Spain) and University Louis Pasteur (France).



Fragment of Bardet Biedl Syndrome mutation detection chip. The number of mutations that can be detected by entire test is 308. The image above shows pseudocolor signals (A-yellow, C-red, G-green, T-cyan)..

APEX

Arrayed Primer EXTension is a genotyping technology that combines the efficiency of a microarray-based assay with the comparable accuracy of the Sanger dideoxy sequencing.

QUALITY CONTROL

Asper Ophthalmics services and products are certified to be in accordance with ISO 9001 quality standards. Each step in the analysis is carried out according to specific protocols and procedures. Independent studies have shown Asper Ophthalmics' tests to be sensitive, specific and reproducible. The dual nature of the arrayed primer extension technology, where the hybridization reaction is coupled with the single base extension, and detection of the mutation from both sense and anti-sense strand ensure stable high quality of the testing at Asper Ophthalmics.

	A	C	G	T	Histogram	BC	Sample	
1						C G	DNA 11	sense anti- sense
2						T A	DNA 13	sense anti- sense
3						CT GA	DNA 14	sense anti- sense

Wt, heterozygous and homozygous genotype of T558I analyzed by APEX.

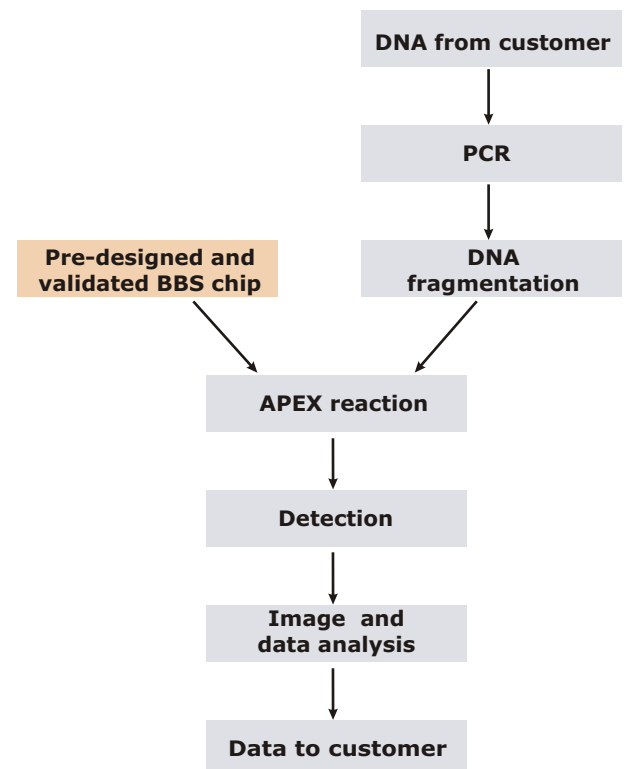
Row 1 normal homozygous allele for position T558 - in sense strand C allele and in antisense strand G allele.
Row 2 homozygous allele for mutation T558I - in sense strand T allele and in antisense strand A allele.
Row 3 heterozygous for mutation T558I - in sense strand C allele and T allele, in antisense strand G allele and A allele.
The mutation causes aminoacid change in position 558 from threonine to isoleucine.

THE PROCESS

DNA sample analysis will be performed under ISO:9001:2000 quality control regulations. Genomic DNA samples will be sent to Asper. Amplification reaction will be performed by using PCR, followed by fragmentation and purification reactions. Microarray slides will be prepared and quality controlled. APEX reaction will be performed and scanned followed by analysis of images. After careful analysis of the images some mutations will be sent for re-analysis. Report will be established and sent out to the partner. Follow-up support will be provided if necessary to explain the results.

In addition, to confirm the results with secondary method, Asper provides verification of the APEX findings by dideoxy sequencing on Applied Biosystems 3130 Genetic Analyzer.

ROUTINE SCREENING OF DNA SAMPLES



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REQUIREMENTS FOR THE DNA SAMPLES

- The DNA quality needs to be ensured.
- 4 µg of genomic DNA is required for BBS chip analysis.
- Preferred concentration range of DNA is 100-250 ng/µl.
- DNA samples should be provided in pure sterile water.

TURNAROUND TIME

Express delivery – The results will be delivered in 3 – 5 working days after the arrival of samples.

Standard delivery – The results will be delivered approximately in 3 – 6 weeks after the arrival of samples.

RECOMMENDATIONS FOR SHIPMENT OF THE SAMPLES

- For speedy and secure delivery, international courier services, for example DHL, UPS and FedEx, are recommended; alternatively, you can send samples by air mail as a small parcel.
- Since high quality DNA samples are stable, there is no need for shipment in dry or wet ice.
- Care should be taken to avoid drying out; please use either screw cap tubes or wrap the caps of each Eppendorf tube with parafilm.
- In order to avoid damage to the tubes during shipment, a tube storage box made of plastic or cardboard, and doubling it with a padded envelope, is recommended. Please avoid using round containers, such as 50 ml Corning tubes, for tube protection.
- Send samples to the following address:
Asper Biotech
Vaksali 17a
Tartu 50410
Estonia
Ph: +372 7307 295
- Please fill in the DNA sample submission form (download the file from webpage) which improves and accelerates the handling of DNA samples and include it in the package.
- Notify us by email (info@asperophthalmics.com, or the respective project manager), including the number of samples, which test is to be performed and tracking data).
- Enclose in the package the list of samples, which test is to be performed and quality data, if available.
- Please make sure that the declared value for the package in the shipment documents does not exceed 10 EUR (USD).

OTHER TESTS PROVIDED BY ASPER

Asper Biotech	Asper Ophthalmics
Thalassemia	Stargardt disease
Cystic Fibrosis	Leber's congenital amaurosis
DNA repair	Usher syndrome
Hereditary Hearing Loss	Aut. Rec. Retinitis Pigmentosa
Ashkenazi Jewish	Aut. Dom. Retinitis pigmentosa
Wilson disease	Bardet Biedl syndrome
Breast and Ovarian canc.	Aut. Dom. Optic Atrophy
	Con. Stat. Night Blindness
	Corneal Dystrophy
	Vitelliform Macular Dystrophy

FOR FURTHER INFORMATION

- 1. Microarray-based mutation analysis of the ABCA4 (ABCR) gene in autosomal recessive cone-rod dystrophy and retinitis pigmentosa.**
 Klevering BJ, Zyer S, Rohrschneider K, Zonneveld M, Allikmets R, van den Born LI, Maugeri A, Hoyng CB, Cremers FPM. European Journal of Human Genetics (2004) 12, 1024-1032.
- 2. Genotyping Microarray (Gene Chip) for the ABCR (ABCA4) Gene**
 K. Jaakson, J. Zernant, M. Kulm, A. Hutchinson, N. Tonisson, D. Glavaci, M. Ravnik-Glavaci, M. Hawlina, M.R. Meltzer, R.C. Caruso, F. Testa, A. Maugeri, C.B. Hoyng, P. Gouras, F. Simonelli, R.A. Lewis, J.R. Lupski, F.P.M. Cremers, and R. Allikmets Hum Mutat 2003, Vol. 22, pp. 395-403.
- 3. Genotyping microarray (disease chip) for leber congenital amaurosis: detection of modifier alleles.**
 Zernant J, Kulm M, Dharmaraj S, den Hollander AI, Perrault I, Preising MN, Lorenz B, Kaplan J, Cremers FP, Maumenee I, Koenekoop RK, Allikmets R. Invest Ophthalmol Vis Sci. 2005 Sep;46(9):3052-9.
- 4. Genotyping Microarray for the Detection of More Than 200 CFTR Mutations in Ethnically Diverse Populations.**
 Schrijver I, Oitmaa E, Metspalu A, Gardner P. J Mol Diagn. 2005 Aug;7(3):375-87
- 5. A first-generation linkage disequilibrium map of human chromosome 22.**
 Dawson, E., Abecasis, G.R., Bumpstead, S., Chen, Y., Hunt, S., Beare, D.M., Pabial, J., Dibbling, T., Tinsley, E., Kirby, S., Carter, D., Papaspyridonos, M., Livingstone, S., Ganske, R., Löhmußsaar, E., Zernant, J., Tõnisson, N., Remm, M., Mägi, R., Puurand, T., Vilo, V., Kurg, A., Rice, K., Deloukas, P., Mott, R., Metspalu, A., Bentley, D. R., Cardon, L.R. and Dunham, I. Nature, August 2002, Vol. 418, pp. 544-548.
- 6. Arrayed Primer Extension Resequencing of Mutations in the TP53 Tumor Suppressor Gene: Comparison with Denaturing HPLC and Direct Sequencing.**
 Le Calvez F, Ahman A, Tonisson N, Lambert J, Temam S, Brennan P, Zaridze DG, Metspalu A, Hainaut P, Clin Chem. 2005 Jul;51(7):1284-7.