

### »Points to Consider with Array CGH Testing

Signature Genomic Laboratories recognizes the health care provider's important role in discussing pertinent information about genetic testing with each patient or family<sup>1</sup>. As a courtesy to our ordering health care providers and patients, we offer the following **Points to Consider** when reviewing the benefits and limitations of Array CGH testing with patients and their families<sup>2</sup>. For more information, including **Frequently Asked Questions for Physicians, Frequently Asked Questions for Patients and Frequently Asked Questions for Prenatal**, please visit our website at [www.signaturegenomics.com](http://www.signaturegenomics.com), email [info@signaturegenomics.com](mailto:info@signaturegenomics.com) or call us directly at 1.877.SigChip (744.2447).

1. Array-based Comparative Genomic Hybridization, also called array CGH or Microarray Analysis, is a new technology that evaluates chromosomes for gains or losses (duplications or deletions) of DNA segments that can cause birth defects and/or mental retardation.
2. Array CGH detects chromosome imbalances at a higher resolution than traditional chromosomal analysis, also called karyotyping. Typically, traditional karyotyping detects alterations at a resolution of 5 Megabases or larger, whereas array CGH will detect alterations that cannot be seen by traditional karyotyping, and sometimes may only be thousands of basepairs in size.
3. Array CGH will not detect balanced chromosome rearrangements such as reciprocal translocations, Robertsonian translocations, inversions, and balanced insertions. These types of abnormalities may be detected by karyotyping. Thus, karyotyping remains an important tool in clinical diagnosis.
4. Array CGH is specifically designed to detect deletions and duplications of chromosome material and cannot detect all mutations in the examined chromosome regions. This technology will not detect sequence alterations or single base pair mutations, or abnormalities in other genes or loci not tested with this technology.
5. This technology was not designed to detect cases of mosaicism and its accuracy in detecting mosaicism is not well-established.
6. Many of the well-characterized genetic conditions tested for by array CGH are caused by more than one underlying genetic mechanism. Therefore, a normal result does not exclude a diagnosis of one or more of the syndromes assessed by the analysis.
7. A normal result does not rule out a chromosome change at an area of the genome not tested by the microarray.
8. For complete prenatal diagnosis, it is recommended that karyotyping be performed prior to, concurrent to, or following array CGH analysis. Karyotyping will detect balanced chromosome rearrangements and in some cases can further characterize structural abnormalities detected by array CGH.
9. An abnormal test result may provide a clinical diagnosis, but many genetic syndromes have variability in clinical presentation and this technology cannot predict mildness or severity of a specific genetic condition.
10. Some test results may have unclear clinical significance, meaning that it is not clear whether the alteration detected causes a clinical abnormality in the patient, or is the explanation for the collection of features already present in the patient. These cases require additional studies on the patient or the parents to assist with interpretation. Sometimes, even after family studies, it is impossible to confirm whether an abnormal test result causes or explains the clinical abnormalities in the patient tested.
11. Some test results may demonstrate an alteration that is also subsequently found in other "normal" family members. The most likely explanation is that these alterations are normal human variants. However, the possibility that they somehow play a role in an abnormal clinical finding cannot be excluded. As more scientific and medical information is learned about the structure of human chromosomes, it is hoped that interpretation of these types of results will become more clear.

<sup>1</sup>In accordance with Washington State Law RCW 7.70.050 and WAC 388-531-0050, providing patients with the information necessary for them to be able to give their informed consent for testing or treatment is the responsibility of the health care provider who has direct contact with the patient. Laboratory tests are ordered and prescribed by physicians so it is the physician, not the laboratory, that is required to obtain the patient's informed consent for testing.

<sup>2</sup>The contents of the **Points to Consider** are provided for informational purposes only and are not and should not be construed as medical advice, diagnosis, or treatment. Only a properly qualified physician can address specific questions regarding a patient's health care needs. Individual inquiries about medical or healthcare issues should be addressed to appropriate healthcare professionals. Nothing contained in the **Points to Consider** should be used to replace or substitute for a patient's personal physician's advice.