Evidence of Compliance:

- ✓ Records confirming intended target

CYG.44666 PGD Report **Phase I**

If in situ hybridization (ISH) testing is performed on cells obtained from embryo biopsy for the purposes of preimplantation genetic diagnosis (PGD), the final report includes an interpretation with information on the limitations of single cell diagnosis in preimplantation embryos.

NOTE: Because only one or two cells may be collected for ISH chromosome analysis using blastomere biopsy, testing that can be conducted is limited and does not allow analysis of all chromosomes for abnormalities. Mosaicism can affect the results of PGD when blastomere biopsy is performed. Also, signal overlap, diffuse hybridization, poor hybridization or poor specimen quality can affect ISH results. Because of the inherent risk of inaccuracy of results, it is important to make patients aware of prenatal follow-up and testing options. The interpretation must be written to facilitate understanding by a non-geneticist.

REFERENCES

1) Munné S and Cohen J (1998) Chromosome abnormalities in human embryos. Hum Reprod Update 4, 842-855.[Abstract/Free Full Text]
2) Ruangvutilert P, Delhanty JDA, Serhal P, Simopoulou M, Rodeck CH and Harper JC. FISH analysis on day 5 post-insemination of human arrested and blastocyst stage embryos. *Prenat Diagn.* 2000; 20(7):552-60.
3) Ruangvutilert P, Delhanty JD, Rodeck CH and Harper JC. Relative efficiency of FISH on metaphase and interphase nuclei from non-mosaic trisomic or triploid fibroblast cultures. *Prenat Diagn.* 2000; 20(2):159-162.
4) Malmgren H, Sahlen S, Inzunza J, Aho M, Rosenlund B, Fridstrom M, Hovatta O, Ahrlund-Richter L, Nordenskjold M, Blennow E. Single cell CGH analysis reveals a high degree of mosaicism in human embryos from patients with balanced structural chromosome aberrations. *Mol Hum Reprod*. 2002 May;8(5):502-10

CYG.46799 Modified FDA-Cleared/Approved Assay **Phase II**

If the laboratory modifies an FDA-cleared/approved assay, the modified procedure has been validated to yield equivalent or superior performance.

Evidence of Compliance:

- ✓ Records of validation studies for modified FDA-cleared/approved assays

REFERENCES

1) American College of Medical Genetics, Standards and Guidelines for Clinical Genetics Laboratories, 2021 edition.

CYG.47866 ISH Interpretation **Phase II**

If an in situ hybridization (ISH) study requires consultation with a qualified pathologist and/or a cytogeneticist for accurate interpretation, the appropriate expert is consulted and their involvement is recorded.

PREDICTIVE MARKERS

The term predictive marker as used in this section refers to in situ hybridization (ISH) biomarkers used independent of histologic findings to identify individuals who are more likely to experience a favorable or unfavorable effect from a specific (targeted) therapy, compared to individuals with the same diagnosis lacking the biomarker. Rather than confirming a specific diagnosis, these biomarkers predict responsiveness to a specific treatment among cases of the same diagnosis.

The current CAP guidelines (CAP Guidelines) relating to predictive marker testing (eg, ASCO/CAP HER2 in breast cancer) may be found at cap.org in the Protocols and Guidelines section. The guidelines are periodically updated based on new evidence. Laboratories should review updated predictive marker guidelines and promptly implement changes for items relating to requirements in the checklists (eg, validation, fixation, scoring criteria).