myriad WOMEN'S HEALTH

RESULTS RECIPIENT
FAKE CLINIC 3
Attn: Dr. Ájqvpögö Tñîfqbvq
123 Main St.
San Francisco, CA 94080
Phone: (415) 555-5555
Fax: (415) 555-5555
NPI: 0000000006
Report Date: 01/02/2019

PREGNANCY DETAILS
Due Date: 07/17/2019
Gestational Age: 11 weeks, 2 days
Pregnancy Type: Singleton
Maternal Weight: 120lbs
Maternal Height: 5ft 6in
Ovum Donor Age: N/A
NT Ultrasound Date: 12/19/2018
NT: 1mm
CRL: 10cm

FEMALE
OCTAVIA MARTINSON
DOB: 10/22/1986
Ethnicity: Northern European
Sample Type: Streck Cell-Free DNA Blood Tube
Date of Collection: 12/28/2018
Date Received: 01/02/2019
Date Tested: 01/02/2019
Barcode: 55200000013876

The Counsyl Prelude™ Prenatal screen has been renamed the Myriad Prequel™ Prenatal screen.

Prequel Prenatal Screen

POSITIVE: PREGNANCY AT INCREASED RISK

ABOUT THIS TEST

The **Myriad Prequel Prenatal Screen** detects whether a pregnancy is at increased risk for certain chromosome conditions.

PANEL DETAILS

Chromosomes 13, 18, 21

RESULTS SUMMARY

Condition	Results	Patient-specific PPV or Residual Risk*
Trisomy 21 (Down Syndrome)	**POSITIVE: PREGNANCY AT INCREASED RISK** **Aneuploidy detected** Results consistent with full or partial trisomy of chromosome 21.	**86.44% (86.44 in 100) PPV**
Trisomy 13 (Patau Syndrome)	**NEGATIVE** Results consistent with two copies of chromosome 13.	< 0.01% (1 in 10,000) Residual Risk
Trisomy 18 (Edwards Syndrome)	**NEGATIVE** Results consistent with two copies of chromosome 18.	< 0.01% (1 in 10,000) Residual Risk

NEXT STEPS

Genetic counseling is recommended.

CLINICAL NOTES

* The positive predictive value (PPV) represents the risk for the pregnancy to be affected with the indicated chromosome anomaly in view of a positive result. The residual risks provided represent the remaining chance that the pregnancy is affected with the indicated chromosome anomaly in view of a negative result.

This is a screening test; therefore, false positive and false negative results can occur. Clinical correlation with ultrasound findings and history is indicated. If definitive diagnosis is desired, chorionic villus sampling or amniocentesis is necessary.

POSITIVE: PREGNANCY AT INCREASED RISK

Trisomy 21 (Down Syndrome)

Patient	**OCTAVIA MARTINSON**
Result	Aneuploidy detected
Methodology	Sequencing with fetal aneuploidy analysis (v2.2)
Interpretation	Results consistent with full or partial trisomy of chromosome 21.
Positive Predictive Value	86.44% (86.44 in 100)

What is Down syndrome?

Most individuals with Down syndrome, called trisomy 21, have an extra copy of chromosome 21 in the cells of the body. This extra genetic material causes changes in development of the embryo and fetus resulting in physical and developmental changes.

IQ typically ranges from mild to moderate intellectual disability. Health conditions can include low muscle tone, heart defects, intestinal issues and vision or hearing conditions. While the average life expectancy for a person with Down syndrome is 60 years, health conditions like those mentioned above may result in a shorter life expectancy.

Each person with Down syndrome is unique and the severity of the symptoms varies greatly among individuals. Outcomes for people with Down syndrome have improved significantly in the past 40 years with increased access to education, social supports, employment opportunities, and family support.

How common is Down syndrome?

Down syndrome occurs in about 1 in 800 live births. The condition is not related to race, nationality, religion or socioeconomic status. There is usually no family history of Down syndrome.

How is trisomy 21 (Down syndrome) treated?

There is no single, standard treatment for Down syndrome. Treatments are based on each individual's physical and intellectual needs as well as his or her personal strengths and limitations.

Individuals with Down syndrome may receive care from a team of health professionals, including physicians, special educators, speech therapists, occupational therapists, physical therapists, and social workers.

REFERENCES

- Curr Opin Pediatr. 2014 Aug;26(4):428-34.
- de Graaf, G. (2015). Estimates of the Live Births, Natural Losses, and Elective Terminations with Down Syndrome in the United States. Am J Med Genet, Part A (167A):756–767.
- Gardner, R. J. M., & Sutherland, G. R. (2011). Chromosome abnormalities and genetic counseling (4th ed.). New York: Oxford University Press, Inc.
- Jones, K. L. (Ed.). (2013). Smith's recognizable patterns of human malformation (7th ed.). Philadelphia: Elsevier Inc.
- Lancet. 2003 Apr 12;361(9365):1281-9.

Resources

LETTERCASE.ORG | http://lettercase.org

The Kennedy Foundation's Understanding a Down Syndrome Diagnosis book (lettercase.org) is intended for patients whose pregnancy has an increased chance for a prenatal diagnosis of Down syndrome. This book includes basic information about Down syndrome; potential medical conditions; available supports; reproductive options; and resources about Down syndrome, and it was prepared with assistance by representatives of the national medical and Down syndrome organizations and is recommended in the guidelines of the major genetics organizations.

Human Development Institute
126 Mineral Industries Bldg.
University of Kentucky
Lexington, KY 40506-0051
Phone: 404-828-0290
info@lettercase.org

NATIONAL DOWN SYNDROME CONGRESS | http://www.ndsccenter.org

Since 1973 NDSC has worked to "provide information, advocacy and support concerning all aspects of life for individuals with Down syndrome."

1370 Center Drive, Suite 102, Atlanta, GA 30338
Phone: 800-232-NDSC (6372)

NATIONAL DOWN SYNDROME SOCIETY | http://www.ndss.org/

NDSS is a national advocacy organization working "for the value, acceptance and inclusion of people with Down syndrome."

666 Broadway, New York, NY 10012
Phone: 800-221-4602

FETAL FRACTION 15.0%	Fetal fraction is one component of the algorithm used and is combined with other quality metrics to determine the aneuploidy screening result.

Methods and Limitations

Methodology: Sequencing with fetal aneuploidy analysis.

Conditions Tested: Chromosome 13 Aneuploidy, Chromosome 18 Aneuploidy, and Chromosome 21 Aneuploidy.

Sequencing with fetal aneuploidy analysis

Nucleic acid extraction and DNA sequencing are used to determine fetal aneuploidy. This test is designed to detect chromosome aneuploidies and is validated for chromosomes 1-22, X and Y. The test is validated for singleton and twin pregnancies with gestational age of at least 10 weeks as estimated by last menstrual period. These results do not eliminate the possibility that this pregnancy may be associated with other chromosomal or subchromosomal abnormalities, birth defects and other conditions. This test is not intended to identify pregnancies at risk for open neural tube defects. A negative test result does not demonstrate the absence of chromosomal abnormalities such as trisomy 21, trisomy 18, trisomy 13, other autosomal aneuploidies, monosomy X, XXX, XXY, and XYY. The individualized residual risks and PPV are calculated from the test performance and the prevalence based upon the provided gestational age and maternal age (or age of ovum donor, if available) for trisomy 13, trisomy 18, and Down syndrome. Twin PPV and residual risk calculations additionally incorporate prevalence of both monozygotic and dizygotic scenarios, regardless of individual status. Monosomy X PPV is calculated from test performance and prevalence based upon the provided gestational age. When an "aneuploidy detected" result is reported in a twin pregnancy, the status of each individual fetus cannot be determined. Although the presence or absence of Y chromosome material can be reported in a twin pregnancy, the occurrence of sex chromosome aneuploidies such as monosomy X, XXX, XXY and XYY cannot be evaluated in twin pregnancies. Autosomal aneuploidies of chromosomes other than 21, 18, and 13 cannot be evaluated in twin pregnancies. Confined placental mosaicism or maternal mosaicism, if present, may cause the test results to be inaccurate.

PRENATAL TEST PERFORMANCE DATA

Chromosome	Sensitivity (95% CI)	Specificity (95% CI)	Chromosome	Sensitivity (95% CI)	Specificity (95% CI)
21	99.7% (99.1 - 99.9)	99.96% (99.93 - 99.98)	Monosomy X	95.8% (70.3 - 99.5)	99.86% (99.62 - 99.95)
21 (twins)	98.6% (92 - 100)	99.95% (99 - 100)	XX	97.6% (94.8 - 99.1)	99.2% (97.2 - 99.9)
18	97.9% (94.9 - 99.1)	99.96% (99.93 - 99.97)	XY	99.1% (96.9 - 99.9)	98.9% (96.9 - 99.8)
13	99.0% (65.8 - 100.0)	99.96% (99.93 - 99.98)			
XXX/XXY/XYY	Other sex aneuploidies will be reported if detected. (Limited data for these less common aneuploidies preclude performance calculations.)				
Sex chromosome mosaicism cannot be distinguished by this method (the occurrence of which is <0.3%). Patients with such mosaicism will have a sex chromosome result reported and will fall into one of six categories (Monosomy X, XXX, XXY, XYY, XX, XY).					
15q11.2 deletion, 1p36 deletion syndrome, 22q11.2 deletion syndrome, 4p deletion, 5p deletion	When requested, the listed microdeletions will be reported if detected. (Limited data for these rare subchromosomal anomalies preclude performance calculations.)				
Expanded autosomal aneuploidies	When requested, autosomal aneuploidies of chromosomes other than 21, 18, 13 will be reported if detected. (Limited data for these aneuploidies preclude performance calculations).				

Note: the above test performance statistics refer to singleton pregnancies unless otherwise stated.

REFERENCES

- Bianchi DW, Platt LD, Goldberg JD, Abuhamad AZ, Sehnert AJ, Rava RP. Genome-wide fetal aneuploidy detection by maternal plasma DNA sequencing. Obstet Gynecol 2012, 119(5):890-901.
- Gil MM, Accurti V, Santacruz B, Plana MN, Nicolaides KH. Analysis of cell-free DNA in maternal blood in screening for aneuploidies: updated meta-analysis. Ultrasound Obstet Gynecol 2017;50:302-14.

- Gravholt CH, Juul S, Naeraa RW, Hansen J. Prenatal and postnatal prevalence of Turner's syndrome : a registry study. BMJ. 1996;312:16-21.
- Illumina, Inc. Analytical Validation of the verifi® prenatal test: Enhanced Test Performance for Detecting Trisomies 21, 18, and 13 and the Option for Classification of Sex Chromosome Status. 2012.
- Liao H, Liu S, Wang H. Performance of non-invasive prenatal screening for fetal aneuploidy in twin pregnancies: a meta-analysis. Prenat Diagn. 2017;37: 874-882.
- Rodis JF, Egan JF, Craffey A, Ciarleglio L, Greenstein RM, Scorza WE. Calculated risk of chromosomal abnormalities in twin gestations. Obstet Gynecol. 1990;76: 1037-1041.
- Simpson LL. Twin-twin transfusion syndrome. Am J Obstet Gynecol. Elsevier; 2013;208: 3-18.
- Snijders RJM, Sundberg K, Holzgreve W, Henry G, Nicolaides KH. Maternal age and gestation-specific risk for trisomy 21. Ultrasound Obstet Gynecol 1999;13:167-70.
- Snijders RJM, Sebire NJ, Cuckle H, Nicolaides KH. Maternal age and gestation age-specific risks for chromosomal defects. Fetal Diag Ther 1995;10:356-67.

Limitations

Possible sources of diagnostic error include sample mix-up, trace contamination, bone marrow transplantation, chimerism or mosaicism, and technical errors. This test was developed and its performance characteristics determined by Myriad Women's Health, Inc. It has not been cleared or approved by the US Food and Drug Administration (FDA). The FDA does not require this test to go through premarket review. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA) as qualified to perform high-complexity clinical testing. These results are adjunctive to the ordering physician's evaluation and should be interpreted in the context of all available clinical findings. CLIA Number: **#05D1102604**.

LABORATORY DIRECTOR

H. Peter Kang, MD, MS, FCAP

PLACEHOLDER E-SIGNATURE