

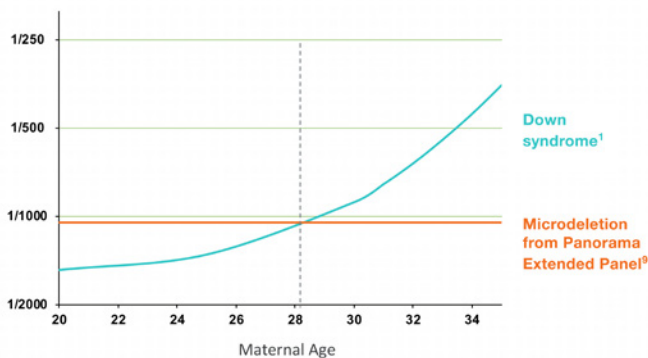
## Microdeletion syndromes

Panorama screens for five microdeletions that are clinically relevant and have a combined incidence of 1 in 1000 live births, in addition to its basic screen for trisomies 21, 18, 13, triploidy, and sex chromosome abnormalities.

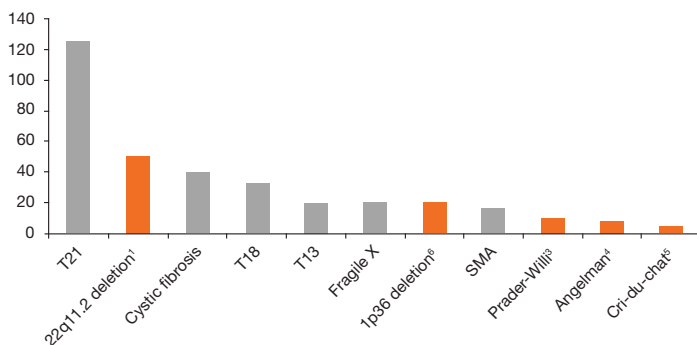
### Why screen for microdeletion syndromes?

- They are common and can be severe.
- They carry equal likelihood across all maternal ages.
- They may be difficult to diagnose at birth.
- Early recognition enables early intervention, which may improve prognosis.

Microdeletions are more common than Down syndrome in younger women



Incidence of microdeletion syndromes screened by Panorama



### Scientifically validated and clinically proven

Microdeletion validation has been completed by Natera with 469 samples, including 110 confirmed positives. Accuracy of performance has been validated at fetal fractions as low as 2.8%. Panorama is validated for the microdeletions screened and offers the highest commercially available sensitivity for 22q11.2 deletion syndrome.<sup>7,8</sup>

### Get started with Panorama's microdeletion screening

You may order the Panorama test alone or with one of these two options where available:

- 22q11.2 deletion syndrome (DiGeorge syndrome/VCFS/22q)
- Panorama Extended Panel which includes: 22q11.2 deletion syndrome, 1p36 deletion syndrome, Cri-du-chat syndrome, Angelman syndrome, and Prader-Willi syndrome

**Please note:** Microdeletion screening cannot be ordered separately from Panorama.

If you want to learn more about Panorama, visit <https://www.natera.com/panorama-test> or contact your Natera representative. You may also reach out to Natera's genetic counselors at [niptgc@natera.com](mailto:niptgc@natera.com).

# Panorama Extended Microdeletion Panel

| Syndrome   | Incidence                         | Sensitivity <sup>7,8</sup> | Specificity <sup>8</sup> | Location size and number of SNPs <sup>1</sup> | Clinical features of the syndrome may include:  |
|--|-----------------------------------|----------------------------|--------------------------|---|---|
| <b>22q11.2 deletion/ DiGeorge</b>                | <b>1 in 2,000<sup>2</sup></b>     | <b>90%</b>                 | <b>&gt;99%</b>           | <b>22q11.2 (2.9Mb) 1358 SNPs</b>              | <b>Mild to moderate intellectual disability, schizophrenia, feeding difficulties, immune disorders, low calcium, seizures.</b>  |
| <b>Prader-Willi</b>                              | <b>1 in 10–30,000<sup>3</sup></b> | <b>93.8%</b>               | <b>&gt;99%</b>           | <b>15q11–q13 Maternal (5.9Mb) 1152 SNPs</b>   | <b>Severe hypotonia and feeding difficulties in infancy, then gradual development of obesity; developmental delay; mild to severe intellectual disorder and behavioural problems; hypogonadism.</b> |
| <b>Angelman</b>                                  | <b>1 in 12–24,000<sup>4</sup></b> | <b>95.5%</b>               | <b>&gt;99%</b>           | <b>15q11–q13 Paternal (5.9Mb) 1152 SNPs</b>   | <b>Severe intellectual disability, ataxia, microcephaly and seizures.</b>   |
| <b>Cri-du-chat</b>                               | <b>1 in 15–50,000<sup>5</sup></b> | <b>&gt;99%</b>             | <b>&gt;99%</b>           | <b>5p15.2 (20Mb) 1152 SNPs</b>                | <b>Cat-like cry, microcephaly, severe psychomotor and intellectual disability.</b>  |
| <b>1p36 deletion</b>                             | <b>1 in 5–10,000<sup>6</sup></b>  | <b>&gt;99%</b>             | <b>&gt;99%</b>           | <b>1p36 (10Mb) 1152 SNPs</b>                  | <b>Developmental delay or intellectual disability, hypotonia, seizures, congenital heart defects, abnormalities of skeleton, kidneys, external genitalia, vision deficits.</b>                      |
| <b>Total incidence: Approximately 1 in 1,000</b> |                                   |                            |                          |   |   |

## References

1. Snijders RJ, Sundberg K, Holzgreve W, Henry G, Nicolaidis KH. Maternal age- and gestation-specific risk for trisomy 21. *Ultra sound Obstet Gynecol.* 1999;13(3):167-170.
2. Shprintzen RJ. Velo-cardio-facial syndrome. In: Cassidy SB, Allanson J, eds. *Management of genetic syndromes.* 2nd ed. New York, NY: Wiley; 2004:615-632.
3. Driscoll DJ, Miller JL, Schwartz S, Cassidy SB. Prader-Willi syndrome. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. *GeneReviews.* October 6, 1998 (last update: December 14, 2017). <https://www.ncbi.nlm.nih.gov/books/NBK1330/>.
4. Dagli AI, Mueller J, Williams CA. Angelman Syndrome. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. *GeneReviews.* September 15, 1998 (last update: December 21, 2017). <https://www.ncbi.nlm.nih.gov/books/NBK1144/>.
5. Cerruti Mainardi P. Cri du Chat syndrome. *Orphanet J Rare Dis.* 2006;1:33. doi:10.1186/1750-1172-1-33
6. Battaglia A. 1p36 deletion syndrome. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. *GeneReviews.* February 1, 2008 (last update: June 6, 2013). <https://www.ncbi.nlm.nih.gov/books/NBK1191/>.
7. Ravi H, McNeill G, Goel S, et al. Validation of a SNP-based non-invasive prenatal test to detect the fetal 22q11.2 deletion in maternal plasma samples. *PLoS ONE.* 2018;13(2): e0193476. doi: 10.1371/journal.pone.0193476
8. Wapner RJ, Babiarz JE, Levy B, et al. Expanding the scope of noninvasive prenatal testing: detection of fetal microdeletion syndromes. *Am J Obstet Gynecol.* 2015;212(3): 332.e1-9.
9. Combined prevalence using higher end of published ranges from Gross et al. *Prenatal Diagnosis* 2011; 39, 259-266; and [www.genereviews.org](http://www.genereviews.org). Total prevalence may range from 1/1071–1/2206.

**Horizon™**  
Advanced carrier screening

**Spectrum™**  
Preimplantation genetics

**Panorama™**  
Next-generation NIPT

**Vistara**  
Single-gene NIPT

**Anora™**  
Miscarriage test (POC)

  
Conceive. Deliver. Thrive.

201 Industrial Road, Suite 410 | San Carlos, CA 94070 | [www.natera.com](http://www.natera.com) | 1-650-249-9090 | Fax 1.650.730.2272

CAP accredited, ISO 13485, and CLIA certified. © 2019 Natera, Inc. All Rights Reserved. PAN-MD\_Microdeletion\_2019\_08\_08\_INTL\_NAT-800616