

## Using Genetic Testing for Diagnosis of Loeys-Dietz Syndrome (LDS)

### Indications:

- Clinical diagnosis or family history of LDS
- Clinical symptoms consistent with Marfan Syndrome, but in absence of ectopia lentis and after exclusion of *FBN1* mutations
- Clinical symptoms consistent with vascular Ehlers-Danlos Syndrome, after exclusion of *COL3A1* mutations

### Benefits:

Genetic testing for LDS-related *TGFBR1* or *TGFBR2* mutations can:

- confirm a clinical diagnosis of LDS and identify the familial mutation
- help to distinguish LDS from Marfan Syndrome, to indicate
  - the need for surgical intervention at an earlier age and/or a smaller degree of aortic dilation than recommended for Marfan patients.
  - an increased risk of arterial aneurysms away from the aortic root
- help to distinguish LDS from vascular Ehlers-Danlos Syndrome, to guide the use of prophylactic surgery, which is recommended for LDS, but not for vascular Ehlers-Danlos Syndrome
- allow targeted genetic family testing (once the familial mutation is known),
  - to identify pre-symptomatic mutation carriers who should take preventative measures and undergo regular monitoring for symptoms of aortic dilation
  - to exclude a highly increased risk of LDS in pre-symptomatic family members who do not carry the familial mutation

### Background:

- Loeys-Dietz syndrome (LDS) is a systemic connective tissue disorder with cardiovascular, skeletal, and cutaneous manifestations that shows clinical overlap with Marfan Syndrome and/or vascular Ehlers-Danlos Syndrome.
- LDS is caused by mutations in the genes *TGFBR1* (25%) or *TGFBR2* (75%).
- Morbidity and mortality in LDS are largely due to complications from aortic aneurysms and dissections and can be reduced by surgical intervention.
- Aortic aneurysms associated with LDS are typically more aggressive than those associated with Marfan Syndrome and can lead to dissection and/or rupture at an earlier age and a smaller degree of dilation.
- Arterial aneurysms associated with LDS are not limited to the aortic root and may not be detectable by echocardiography alone.
- LDS is associated with a high risk of pregnancy related complications, including uterine rupture.

**References:** 1. Loeys BL et al (2006) N Engl J Med 355:788. 2. Aalberts JJJ et al (2008) Neth Heart J 16:299. 3. Loeys, BL, Dietz HC. GeneReviews, <http://www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=gene&part=loeys-dietz>, accessed 061409

**Ordering Information:** Please see other side.

# Ordering Information for Loeys-Dietz Syndrome (LDS) Testing

## Indications for Testing

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## Ordering Information for Single Gene Tests

Gene(s)	CPT Codes	Test Code
<b>TGFBR1</b>	83891(1) 83892(1) 83898(9) 83904(18) 83909(18) 83912(1)	190602
<b>TGFBR2</b>	83891(1) 83892(1) 83898(9) 83904(18) 83909(18) 83912(1)	190603

## Ordering Information for Multi-Gene Panels\*

<b>TGFBR1, TGFBR2</b>	83891(1) 83892(1) 83898(18) 83904(36) 83909(36) 83912(3)	190698
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## Family Testing (single amplicon)

<b>(applies to both genes)</b>	83891(1) 83892(1) 83898(1) 83904(2) 83909(2) 83912(1)	use single-gene test code
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## Test Methodology and Sample Requirements

- Amplification by polymerase chain reaction (PCR); sequencing of entire protein-coding region
- For blood samples:
  - 2 mL whole blood in EDTA tube (lavender top)
  - Samples can be stored briefly at 4°C, but should be shipped on day of collection.
- For buccal swab samples: (only accepted for family testing)
  - Please contact client services at 1-866-647-0735 for instructions.
- All sample types should be shipped overnight at room temperature.
- To request a sample shipping kit, please call 1-866-647-0735.

**For more information, please contact Correlagen Diagnostics, Inc., at 1-866-647-0735  
or visit us on the web at [www.correlagen.com](http://www.correlagen.com)**