

## Overview

### Useful For

Molecular confirmation of clinically suspected cases of sporadic or familial spinobulbar muscular atrophy (SBMA)

Presymptomatic testing for individuals with a family history of SBMA and a documented expansion in the androgen receptor (*AR*) gene

### Testing Algorithm

See [Inherited Motor Neuron Disease Testing Algorithm](#) in Special Instructions.

### Special Instructions

- [Informed Consent for Genetic Testing](#)
- [Molecular Genetics: Neurology Patient Information](#)
- [Inherited Motor Neuron Disease Testing Algorithm](#)
- [Informed Consent for Genetic Testing \(Spanish\)](#)

### Method Name

A Polymerase Chain Reaction (PCR)-based assay is utilized to detect expansion-type mutations (CAG repeats) within the androgen receptor gene.

### NY State Available

Yes

## Specimen

### Specimen Type

Varies

### Shipping Instructions

Specimen preferred to arrive within 96 hours of draw.

### Specimen Required

**Patient Preparation:** A previous bone marrow transplant from an allogenic donor will interfere with testing. Call 800-533-1710 for instructions for testing patients who have received a bone marrow transplant.

**Specimen Type:** Whole blood

#### Container/Tube:

**Preferred:** Lavender top (EDTA) or yellow top (ACD)

**Acceptable:** Any anticoagulant

**Specimen Volume:** 3 mL

#### Collection Instructions:

1. Invert several times to mix blood.

2. Send specimen in original tube.

**Forms**

1. **New York Clients-Informed consent is required.** Document on the request form or electronic order that a copy is on file. The following documents are available in Special Instructions:

-[Informed Consent for Genetic Testing](#) (T576)

-[Informed Consent for Genetic Testing-Spanish](#) (T826)

2. [Molecular Genetics: Neurology Patient Information](#) in Special Instructions

3. If not ordering electronically, complete, print, and send a [Neurology Specialty Testing Client Test Request](#) (T732) with the specimen.

**Specimen Minimum Volume**

0.5 mL

**Reject Due To**

All specimens will be evaluated by Mayo Clinic Laboratories for test suitability.

**Specimen Stability Information**

Specimen Type	Temperature	Time	Special Container
Varies	Ambient (preferred)		
	Frozen		
	Refrigerated		

**Clinical and Interpretive**

**Clinical Information**

X-linked spinal and bulbar muscular atrophy (spinobulbar muscular atrophy: SBMA; or Kennedy disease) is characterized by onset of progressive muscle weakness, atrophy, and fasciculations typically in the fourth or fifth decade of life. Affected patients also have signs of androgen insensitivity such as gynecomastia, reduced fertility, and testicular atrophy. The clinical severity and age at onset can be quite variable, even within families. Because this is an X-linked disease, males manifest this disorder and females are generally asymptomatic carriers. However, there have been reports of female carriers who exhibit symptoms such as muscle weakness and cramping.

SBMA is caused by an expansion of the CAG trinucleotide repeat in exon 1 of the human androgen receptor (*AR*) gene. This trinucleotide repeat is polymorphic in the general population, with the number of repeats ranging from 11 to 34. The number of repeats found in affected individuals can range from 38 to 62. There is no consensus as to the clinical significance of alleles of 35 CAG repeats and literature suggests that alleles of 36 to 37 CAG repeats may be associated with reduced penetrance. [As with other trinucleotide repeat disorders, anticipation is frequently observed and larger CAG expansions are associated with earlier onset and a more rapid clinical progression.](#)

**Reference Values**

Normal alleles: 11-34 CAG repeats

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Abnormal alleles: 36-62 CAG repeats

An interpretive report will be provided.

### Interpretation

An interpretive report will be provided.

### Cautions

For predictive testing, it is important to first document the presence of a CAG-repeat amplification in the androgen receptor (*AR*) gene in an affected family member to confirm that molecular expansion is the underlying mechanism of disease in the family.

We strongly recommend that patients undergoing predictive testing receive genetic counseling both prior to testing and after results are available.

Predictive testing of an asymptomatic child is not recommended.

Test results should be interpreted in the context of clinical findings, family history, and other laboratory data. Errors in our interpretation of results may occur if information given is inaccurate or incomplete..

Current evidence suggests that the majority of individuals with spinobulbar muscular atrophy (SBMA) have a CAG-repeat expansion. However, we cannot eliminate the possibility that another type of mutation not detected by our assay is present within the *AR* gene.

### Clinical Reference

Pinsky L, Beitel LK, Trifiro MA: Spinobulbar Muscular Atrophy. In *The Metabolic and Molecular Basis of Inherited Disease*. Vol 4. 8th edition. Edited by CR Scriver. AL Beaudet, WS Sly, et al. New York, McGraw-Hill Book Company, 2001, pp 4147-4157

### Performance

#### Method Description

Direct mutation analysis. A PCR-based assay is used to detect amplification-type mutations (CAG-repeat expansion) within the *AR* gene. (Doyu M, Sobue G, Mukai E, et al: Severity of X-linked recessive bulbospinal neuronopathy correlated with size of the tandem CAG repeat in androgen receptor gene. *Ann Neurol* 1992;31:707-710)

#### PDF Report

No

#### Day(s) and Time(s) Test Performed

Tuesday; 10 a.m.

#### Analytic Time

5 days

#### Maximum Laboratory Time

11 days

#### Specimen Retention Time

Whole Blood: 2 weeks (if available) Extracted DNA: 3 months

**Performing Laboratory Location**

Rochester

**Fees and Codes**
**Fees**

- Authorized users can sign in to [Test Prices](#) for detailed fee information.
- Clients without access to Test Prices can contact [Customer Service](#) 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact [Customer Service](#).

**Test Classification**

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

**CPT Code Information**

81204-AR (androgen receptor)(eg, spinal and bulba muscular atrophy, Kennedy disease, X chromosome inactivation) gene analysis; characterization of alleles (eg, expanded size or methylation status)

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
SBULB	Spinobulbar Musc Atrophy, Kennedy's	In Process

Result ID	Test Result Name	Result LOINC Value
53341	Result Summary	50397-9
53342	Result	82939-0
53343	Interpretation	69047-9
53344	Reason for Referral	42349-1
53345	Specimen	31208-2
53346	Source	31208-2
53348	Released By	18771-6