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Client: Example Client ABC123
123 Test Drive
Salt Lake City, UT 84108
UNITED STATES

Physician: Doctor, Example

Patient: Patient, Example

DOB	1/1/1959
Gender:	Female
Patient Identifiers:	01234567890ABCD, 012345
Visit Number (FIN):	01234567890ABCD
Collection Date:	00/00/0000 00:00

Noonan Syndrome (PTPN11) Sequencing with Reflex to (SOS1) Sequencing

ARUP test code 2004189

NS REFLEX Specimen: Whole Blood

Noonan Syndrome Interpretation: Negative

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TEST PERFORMED - 2004189
TEST DESCRIPTION - Noonan Syndrome (PTPN11) Sequencing with
Reflex to (SOS1) Sequencing
INDICATION FOR TEST - Confirm Diagnosis

RESULT
No pathogenic variants were detected in the PTPN11 or SOS1 genes.

INTERPRETATION
No pathogenic variants were detected in the PTPN11 or SOS1 genes
using bidirectional sequencing of all coding regions and
intron-exon boundaries.  However, a diagnosis of Noonan syndrome
could not be excluded, since PTPN11 and SOS1 pathogenic variants
only are causative for approximately 70 percent of cases.

RECOMMENDATIONS
Consideration should be given to adding the Noonan Spectrum
Disorders Panel, Sequencing (ARUP test code 2010772) assay if a
cause for the patient's symptoms has not be elucidated. Medical
management should rely on clinical findings. Genetic
consultation is recommended.

COMMENTS
Reference Sequences: GenBank # NM_002834.3 (PTPN11); NM_005633.3
(SOS1)
Nucleotide numbering begins at the "A" of the ATG initiation
codon.
Likely benign and benign variants are not included in this
report.

This result has been reviewed and approved by Rong Mao, M.D.
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H=High, L=Low, *=Abnormal, C=Critical

BACKGROUND INFORMATION: Noonan Syndrome (PTPN11) Sequencing with Reflex to (SOS1) Sequencing

CHARACTERISTICS OF NS: Short stature, developmental delay, dysmorphic facial features, congenital heart disease, broad or webbed neck, superior pectus carinatum and inferior pectus excavatum, low-set nipples, cryptorchidism, coagulation, and lymphatic disorders.
INCIDENCE: 1 in 1000 to 1 in 2500
INHERITANCE: Autosomal dominant.
PENETRANCE: Unknown.
CAUSE OF NS: Pathogenic mutations in PTPN11, SOS1, RAF1, KRAS and other unidentified genes.
GENES TESTED: PTPN11 and SOS1.
CLINICAL SENSITIVITY: Approximately 70 percent.
METHODOLOGY: Bidirectional sequencing of the entire PTPN11 coding region and intron-exon boundaries. If no known pathogenic mutations are detected, bidirectional sequencing of the SOS1 coding region and intron-exon boundaries is performed.
ANALYTICAL SENSITIVITY AND SPECIFICITY: 99 percent.
LIMITATIONS: Diagnostic errors can occur due to rare sequence variations. Regulatory region mutations, deep intronic mutations and large deletions/duplications will not be detected. Mutations in genes, other than PTPN11 and SOS1, will not be evaluated.

Test developed and characteristics determined by ARUP Laboratories. See Compliance Statement C: aruplab.com/CS

VERIFIED/REPORTED DATES

Procedure	Accession	Collected	Received	Verified/Reported
NS REFLEX Specimen	19-136-401547	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00
Noonan Syndrome Interpretation	19-136-401547	00/00/0000 00:00	00/00/0000 00:00	00/00/0000 00:00

END OF CHART

H=High, L=Low, *=Abnormal, C=Critical