**Lab Dept:** Coagulation  
**Test Name:** ACTIVATED PROTEIN C RESISTANCE

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### General Information

**Lab Order Codes:** APCRBL

**Synonyms:** APC resistance; APCR; Screen for Factor V Leiden

**CPT Codes:** 85307 – Activated Protein C (APC) resistance assay

**Test Includes:** APCR ratio

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### Logistics

**Test Indications:** Useful for diagnosing patients who are predisposed to thrombosis and are not responding appropriately to anticoagulant therapy. Used as a screen to rule out the presence of Factor V Leiden.

**Lab Testing Sections:** Coagulation (Minneapolis Campus)

**Phone Numbers:**  
- MIN Lab: 612-813-6280
- STP Lab: 651-220-6550

**Test Availability:** Monday – Friday (0630 – 1500)

**Turnaround Time:** 1 – 3 days

**Special Instructions:** Test can be performed on patients on Coumadin and/or heparin. Test cannot be performed on patients on argatroban or like products.

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### Specimen

**Specimen Type:** Whole blood

**Container:** Light Blue top (Buffered Na citrate 3.2%) tube

**Draw Volume:** 2.7 mL blood in a 3 mL tube (Minimum: 1.8 mL in a 2 mL tube)

**Processed Volume:** Minimum 1.8 ml (plasma).

**Collection:**
Special Processing:
Lab Staff: All testing will be performed in Minneapolis.
St.Paul Lab: Send whole blood specimens to Mpls.

For processing via courier. Must be processed within 4 hours of collection. Contact Mpls prior to sending. If there will be a delay in delivery, the sample should be spun, plasma removed and spun again. Aliquot spun plasma into a screw-capped plastic vial and freeze at -70. Send frozen plasma.

Patient Preparation:
Patient should not be receiving argatroban or like products

Sample Rejection:
Improper tube; clotted sample; underfilled tube; mislabeled or unlabeled specimens

**Interpretive**

<table>
<thead>
<tr>
<th>Reference Range</th>
<th>APC Ratio</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;1.5</td>
<td>Suggests Factor V Leiden is present</td>
</tr>
<tr>
<td></td>
<td>1.5 - 2.0</td>
<td>Borderline</td>
</tr>
<tr>
<td></td>
<td>&gt;2.0</td>
<td>Unlikely Factor V mutation is present</td>
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</table>

**Clinical Interpretation:** Functional clotting test for resistance to activated Protein C: Up to 90% of activated Protein C resistance is caused by Factor 5 Leiden mutation which can be detected using PCR molecular testing.

- If APCR is positive (or borderline), Factor 5 Leiden is recommended
- If APCR is positive and Factor 5 Leiden is negative, APCR is likely due to another mutation (10 – 15% of cases).
- If APCR is negative, it is unlikely any Factor 5 mutation is present.

Critical Values:
N/A

Limitations:
Test cannot be performed on patients on argatroban or like products.

Methodology:
The Siemens Factor V Leiden Assay is based on the activation of endogenous Protein C by incubation of plasma with Agkistrodon contorix (Southern Copperhead) venom. A dilute Russells Viper Venom time (DRVVT) is then performed on the plasma. The DRVVT is sensitive to prolongation in the presence of APC.
**References:**

Factor V Leiden Assay (May 2005) Siemens Package Insert, Siemens Healthcare Diagnostics, Marburg Germany


Thrombophilia Powerpoint presentation Kandice Kottke-Marchant M.D. PhD.
http://aniaracorp.s3.amazonaws.com/PhyFiles/Thrombophilia2/Marchant_medium.wmv


ProC Control Plasma package insert (May 2008) Siemens Healthcare Daignostics, Marburg Germany

Application Sheet for Factor V Leiden Assay on the BCA and BCS XP System.


Control Plasma N package insert (December 2007) Siemens Healthcare Diagnostics, Newark, DE

**Updates:**

2/6/2012: Test moved from referral to Fairview University to being performed at inhouse at Children's Laboratory.
9/15/2014: Added Offsite Campus collection info