Patient Name	Patient ID	Age	Gender	Order #
TEST,IMPLEMENTATION TESTING	321	57	F	R1057670
Ordering Phys Test,Path				**DOB** 05/23/1956
Client Order # R1057670	**Account Information**			**Report Notes**
Collected 06/27/2013 06:00	C7028846-DLMP Rochester 3050 Superior Drive Rochester, MN 55901			
Printed 07/16/2013 13:14				

Test	Flag	Results	Unit	Reference Value	Perform Site*
Bone Marrow Bx					
RECEIVED: 06/27/2013 13:21 **REPORTED:** 06/29/2013 06:18					
Bone Marrow fix sect		Performed			MCR
HemePath Consultation, Wet Tissue					
RECEIVED: 06/27/2013 13:21 **REPORTED:** 06/29/2013 06:18					
Accession Number		BR13-48			MCR
Referring Pathologist/Physician					MCR
Doctor Test Jr., M.D.					
Ref Path/Phys Address					MCR
Methodist Hospital 200 1st Street SW Rochester, MN 55905 507-266-0740					
Final Diagnosis:					MCR

Peripheral blood, bone marrow aspirate, biopsy and clot sections (HB13-21; collected 6/7/2013):
1) Moderately hypercellular marrow with eosinophilia, moderately increased megakaryopoiesis with slight cytologic atypia, and slightly to moderately increased erythropoiesis.
2) No morphologic features diagnostic of marrow involvement by a myeloproliferative neoplasm or lymphoproliferative disorder. Please see comment.

Diagnosis Comment:
According to the included CBC results, the patient has a microcytic erythrocytosis, leukocytosis, and thrombocytosis. All these findings, in the setting of a hypercellular bone marrow, raise the possibility of a myeloproliferative neoplasm. The absence of well-formed megakaryocyte clusters, cytologically abnormal eosinophil maturation, or supportive cytogenetic or molecular genetic findings precludes an unequivocal diagnosis.
Further studies to consider to further exclude the possibility of a myeloid neoplasm include JAK2 sequencing assays to assess for mutations other than the V617F mutation, MPL gene sequencing studies, serum tryptase studies to evaluate for potential mast cell disease, c-Kit mutational analysis and FISH studies for imatinib sensitive genetic abnormalities. Serum erythropoietin studies may also be helpful as a low value would suggest that the increased in erythropoiesis and red cell mass is attributable to a primary myeloid neoplasm, whereas a high value would suggest that the erythrocytosis is secondary in nature.
Possible secondary causes to consider for the peripheral blood and bone marrow findings include hereditable red blood cell abnormalities such as thalassemia, which can cause microcytic

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erythrocytosis and secondary thrombocytosis. Possible causes for the eosinophilia include T-cell lymphoproliferative disorders, systemic inflammatory conditions, and parasitic infection.
Given the unusual constellation of findings in this case, correlation with other clinical and laboratory features is strongly recommended to further determine if the observed changes are attributable to a primary myeloid neoplasm or are secondary to other causes. If, after extensive evaluation, no potential cause for the observed abnormalities can be identified, continued monitoring of peripheral blood counts with repeat bone marrow examination as clinically indicated may be helpful in determining if a diagnosis of a primary myeloid neoplasm can be made by exclusion of all other possible contributing factors.
If there are any questions about the analysis or the diagnosis in this case, please call Dr. William G. Morice, Division of Hematopathology, Mayo Medical Laboratories at 1-800-533-1710.

Microscopic Description: MCR

Peripheral Blood
By report--CBC (dated 6/7/2013): Hgb 15.8 g/dL; RBC 6.15 x 10(12)/L; MCV 77.9 fL; RDW 18.8%; WBC 30 x 10(9)/L; PLT 900 x 10(9)/L.
No peripheral blood smear included for review.
Bone Marrow Aspirate/Touch Imprint
Quality: Hypercellular; M:E ratio approximately 4:1.
Erythroid precursors: Quantity increased; maturation megaloblastoid. No dyserythropoietic forms seen.
Granulocytic/monocytic precursors: Quantity increased; maturation normal to slightly left shifted. No dysplastic mature or maturing forms. Blasts not increased (<5%). Increased numbers of mature eosinophils and cytologically unremarkable eosinophil precursors are noted.
Megakaryocytes: Quantity increased; cytology slightly abnormal with intermediate-sized forms having slightly hypolobate-appearing nuclei. No small mononucleated or multinucleated forms or large osteoclast-like forms seen.
Lymphocytes: No increase; no cytologic atypia.
Plasma cells: Present, <5% of cellularity. Rare binucleated forms noted.
Other: No increase in mast cells or cytologically abnormal mast cells noted.

Bone Marrow Biopsy/Clot
Quality: The biopsy is marginally adequate, being subcortical with crush and aspiration artifact. The clot section specimens are adequate.

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Test	Flag	Results	Unit	Reference Value	Perform Site*
Cellularity: Moderately hypercellular; 80%.					
Erythroid precursors: Quantity slightly to moderately increased; morphology unremarkable.					
Granulocytic/monocytic precursors: Quantity moderately increased with a prominent increase in eosinophils. No foci of blasts or monocytic nodules.					
Megakaryocytes: Quantity moderately increased; morphology slightly abnormal with occasional intermediate-sized forms having hypolobate-appearing nuclei. Distributed singly and in focal loose aggregates; no well-formed clusters. No large megakaryocytes with staghorn-like nuclei are seen.					
Lymphocytes: Scattered small interstitial lymphoid cells are present; however, no discrete lymphoid aggregates or infiltrates are seen.					
Plasma cells: Present, <5% of cellularity. Unremarkable morphology.					
Other: No perivascular or paratrabecular mast cell infiltrates or eosinophilic microabscesses are seen.					
Special Studies:					MCR
Iron stain, bone marrow aspirate and clot sections, slides submitted: Storage present, appears slightly decreased. No sideroblasts or ring sideroblasts seen.					
Reticulin stain, bone marrow biopsy, slide submitted: No increase in reticulin fibers.					
The results of additional studies were described in the included report. Mention are a normal male karyotype, negative "JAK2" studies and lack of BCR/ABL translocation.					
Signing Pathologist:		See Below			MCR
Result:6/29/2013 06:18 Interpreted by: Pathologist X. Test, M.D.					
Report electronically signed by Debbie A. Postier					
Transcribed by: smr02 6/28/2013 08:28:37					
Specimen:					MCR
A:HemePath Consultation, Wet Tissue					
Material:					MCR
16 slides (BM12-36) collected 7/12/13					
1 block (BM12-36)					
SLIDE DISPOSITION:					
16 slides/1 block/10 slides made from block returned 7/5/13 - smf					

* Performing Site:

MCR	Mayo Clinic Laboratories - Rochester Main Campus 200 First St SW Rochester, MN 55905	Lab Director: