MEDICAL GENOMICS LABORATORY 720 Twentieth Street South, Suite 330 Phone: (205) 934-5562

Birmingham, Alabama 35294-0005

20 Twentieth Street South, Suite 330 Phone: (205) 934-5562 rmingham, Alabama 35294-0005 Fax: (205) 996-2929 www.uab.edu/medicine/genetics/medical-genomics-laboratory

UAB MGL Accession

		Received:	Reviewed:	Accession:	E	Billing:	Other:	
For MGL Lab Use	Initials:							
	Date:							
l -	Comment:							
			Impo	ortant Notes				
-This form must ac -Billing information	n (page 5) mus	t be included	s available online at <u>www</u>	-All specimens -Testing must b	e ordered	by a qualified clinician	identifiers and collection date	
				quisition Form				
		ent Information	•			Ordering Physic		
Sample Collected:	(MM/DD/YY)				k box if phy	sician should receive re	,	
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				Institution:				
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Check all that ap	iniv.	nlv: Patient or family member is pregnant. LMP:			☐ Patient has had chemotherapy in the past 6 months			
Patient has had a bone marrow transplant				☐ Infectious diseases (AIDS, Hepatitis, etc.)				
N /D		Has	this patient or relative			es 🗆 No		
Name/Relationship to patient:			i est/Variant/l	Test/Variant/Lab:				
Name/Relationship to patient:			Test/Variant/I	ab:				
			Infor	med Consent				

Provider's statement: I acknowledge the risks, benefits, limitations, and implications of genetic testing as outlined on the complete informed consent handout; and I have discussed the test(s) requested with the patient/guardian and I have answered his/her questions regarding testing. Informed consent has been obtained from the patient/guardian and the hard copy will be maintained.

Provider's Signature:	

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Name:

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DOB: (MM/DD/YY)

Lymphocyte/White Blood Cell-based Comprehensive Testing via Next-Gen Sequencing ☐ RUSH Analysis: Testing completed within 15 working days of receipt of sample (Additional \$600 RUSH fee applied; only available for tests on this page) NF1/Legius syndrome and Other RASopathy Related Conditions NF2/Schwannomatosis/Meningiomatosis □ NF1-NG: NGS and Del/Dup: NF1 only ■ NF2-NG: NGS and Del/Dup: NF2 only □ NFSP-NG: NGS and Del/Dup: NF1 and SPRED1 ☐ SCH-NG: NGS: 3 genes: LZTR1, NF2, and SMARCB1; and Del/Dup: ■ NNP-NG: NGS: 17 genes (no NF1): BRAF, CBL, HRAS, KRAS, LZTR1, NF2, LZTR1, and SMARCB1 MAP2K1, MAP2K2, NRAS, PPP1CB, PTPN11, RAF1, RASA2, RIT1, SHOC2, SOS1, SOS2, and SPRED1; and Del/Dup; SPRED1 and LZTR1 ■ MEN-NG: NGS: 4 genes: NF2, SMARCB1, SMARCE1, and SUFU; and Del/Dup: NF2 and SMARCB1 □ RAS-NG: NGS: 18 genes: BRAF, CBL, HRAS, KRAS, LZTR1, MAP2K1, MAP2K2, NF1, NRAS, PPP1CB, PTPN11, RAF1, RASA2, RIT1, SHOC2, SOS1, Peripheral Nerve Sheath Tumor Testing SOS2, and SPRED1; and Del/Dup: NF1, SPRED1, and LZTR1 □ PNT-NG: NGS: 6 genes: NF1, NF2, KRAS, LZTR1, PTPN11 and ☐ CST-NG: NGS: HRAS only SMARCB1; and Del/Dup: NF1, NF2, LZTR1, and SMARCB1 McCune-Albright Syndrome Rhabdoid Tumor Predisposition Syndrome ☐ GNAS-NG: NGS: GNAS exons 8 and 9 only □ RT-NG: NGS: SMARCB1 and SMARCA4; and Del/Dup: SMARCB1 only Capillary Malformation Arteriovenous Malformation Syndrome **Tuberous Sclerosis Complex** ☐ TSCP-NG: NGS and Del/Dup: TSC1 and TSC2 □ RASA-NG: NGS: RASA1 and EPHB4; and Del/Dup: RASA1 only **Additional Information** For additional testing options via tumor/biopsy, please see page 3 of this order form. **Test Description Key:** Please contact the lab via phone (205) 934-5562 or via email at medgenomics@uabmc.edu if you have any questions Next Generation Sequencing (NGS) when completing this form. Deletion/Duplication analysis (Del/Dup) For additional information, visit our website at www.uab.edu/medicine/genetics/medical-genomics-laboratory Important points of consideration for testing The average coverage for all of our panels is >1800x. Specifically for the NF1 gene, the NGS approach covers >98.5% of the NF1 coding region at ≥350X and 99.9% ≥200X, allowing detection of very low level mosaicism, down to 3-5% variant allele fraction respectively. For all other genes on our panels, the NGS approach covers an average of 99% at ≥200X. Remaining regions are covered at ≥30X. However, for patients with segmental/mosaic presentation, deep coverage in lymphocyte cells may be insufficient to identify the underlying gene change. Testing the affected tissue(s) may be necessary to confirm a diagnosis. Please see page 3 for our tumor/biopsy-based testing options. Please note: For patients with an ongoing pregnancy who require comprehensive NF1 testing, "NF1-R" is recommended due to the sensitivity and fast turnaround time of this test (please see page 4 for this option). **Specimen Requirements**

Accepted Specimens	Specimen Information:
Specimen requirements vary based on test requested; please see our	□ Peripheral Blood (EDTA); # Tubes:
website for more details.	□ Extracted DNA; Source:
-Blood: 3-6ml EDTA (receipt within one week of collection)	□ Saliva (kit must be provided by MGL)
-Saliva: OGR-575 DNA Genotek (kits are provided upon request)	☐ Other, please describe:
-DNA: extracted from lymphocyte cells, a minimum of 25ul at 3μg, O.D. value at 260:280nm ≥1.6 (must be extracted in a CLIA or equivalent certified lab)	Please note: failure to provide a date of collection can delay release of results
-Fibroblast cells	Sample Collected Date (required):

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Name: DOB: (MM/DD/YY) **Tumor/Biopsy-based Comprehensive Testing** ☐ Please check here if blood or DNA is provided for confirmation testing. Blood Collected: (MM/DD/YY) NF1/SPRED1 on biopsied CALs and Neurofibromas NF2/Schwannomatosis ☐ NF2-NG: Fresh/Frozen Tumor ☐ NF24: Tumor Block for Sanger **Please contact the laboratory at least one week in advance of the for NGS and Del/Dup: NF2 only and **Del/Dup**: NF2 only biopsy before ordering this test as media must be provided in advance and special shipping instructions apply. Biopsies must arrive within 60 ☐ SCH-NG: Fresh/Frozen Tumor ☐ SCHP: Tumor Block for Sanger hours of collection** for NGS and Del/Dup: LZTR1, NF2, and Del/Dup: NF2, LZTR1, and and SMARCB1 SMARCB1 □ NF14C: Sanger (RNA) and Del/Dup: NF1 (with automatic reflex to Rhabdoid Tumor Predisposition Syndrome SPRED1) on biopsied CALs ☐ RT-NG: Fresh/Frozen Tumor for ☐ SB14RT: Tumor Block for □ NF14N: Sanger (RNA) and Del/Dup: NF1 on biopsied neurofibromas NGS SMARCB1 and SMARCA4; Sanger and Del/Dup: SMARCB1 and Del/Dup: SMARCB1 only **RASopathy Related Conditions** Meningiomatosis ■ MEN-NG: Fresh/Frozen Tumor for NGS: NF2, SMARCB1, SMARCE1, □ NNP-NG: Fresh/Frozen Tumor for NGS (no *NF1*): BRAF, CBL, HRAS, and SUFU; and Del/Dup: NF2 and SMARCB1 KRAS, LZTR1, MAP2K1, MAP2K2, NRAS, PPP1CB, PTPN11, RAF1, RASA2, Peripheral Nerve Sheath Tumor Testing RIT1, SHOC2, SOS1, SOS2, and SPRED1; and Del/Dup: SPRED1 and LZTR1 □ PNT-NG: Fresh/Frozen Tumor for NGS: NF1, NF2, KRAS, LZTR1, □ RAS-NG: Fresh/Frozen Tumor for NGS: BRAF, CBL, HRAS, KRAS, LZTR1, PTPN11 and SMARCB1; and Del/Dup: NF1, NF2, LZTR1, and SMARCB1 MAP2K1, MAP2K2, NF1, NRAS, PPP1CB, PTPN11, RAF1, RASA2, RIT1, SHOC2, SOS1, SOS2, and SPRED1; and Del/Dup: NF1, SPRED1, and **Tuberous Sclerosis Complex** LZTR1

Additional Information

Test Description Key:

Next Generation Sequencing (NGS) Sanger Sequencing (Sanger) Deletion/Duplication analysis (Del/Dup)

Please contact the lab via phone (205) 934-5562 or via email at medgenomics@uabmc.edu if you have any questions when completing this form.

For additional information, visit our website at www.uab.edu/medicine/genetics/medical-genomics-laboratory

☐ TSC-NG: Fresh/Frozen Tumor for NGS and Del/Dup: TSC1 and TSC2

Important points of consideration for testing

- The MGL offers next generation sequencing testing options that provide the ability to identify variants (indels and substitutions) as low as 3% of the alleles, depending on coverage in the regions of interest.
- NF1/SPRED1 biopsy-based testing is considered the "gold standard" approach for confirming a diagnosis of mosaic/segmental NF1 or Legius Syndrome.
- A minimum of two biopsies is required for NF1 testing. Two or more tumors are suggested for our other testing options. There are no additional fees associated with testing on additional biopsy specimens.
- When proceeding with tumor-based testing for NF2, test code "SCH-NG" or "SCHP" (NF2, SMARCB1, and LZTR1) is suggested unless the patient has additional findings unique to NF2.

Specimen Requirements					
Accepted Specimens	Specir	men Information:			
Specimen requirements vary based on test requested; please see our website for more details.	□ Frozen	□ Fresh			
more details.	□ Paraffin Curls	□ Paraffin Block			
-CALs or Neurofibromas: require special media transport (kits are provided upon request, to be arranged at least one week in advance of procedure)	□ Extracted DNA; Source:				
-Fresh/Frozen Tumors: please submit a pathology report; for additional	□ Biopsy-CAL-spot; # biopsies:				
requirements, see tumor submission checklist -Formalin-Fixed Paraffin-Embedded Tumors (Tumor Block): please submit a	□ Biopsy-Neurofibroma; # bio	opsies:			
pathology report; blocks are preferred to curls, when available; for additional	Please note: failure to provide a date of collection can delay release of results				
requirements, see tumor submission checklist	Tumor Collection Date (red	quired):			



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Name: DOB: (MM/DD/YY) Sanger Testing from Blood/Saliva/DNA NF1/Legius syndrome and Other RASopathy Related Conditions Medium Chain Acyl-CoA Dehydrogenase Deficiency (MCADD) □ NF1-R: Sanger and Del/Dup: NF1 (RNA) ☐ MCD1: Targeted analysis of exon 11 and, if needed, reflexive full gene sequencing by Sanger: ACADM □ NFSP-R: Sanger and Del/Dup: NF1 (RNA) and SPRED1 (gDNA) Von Hippel-Lindau Autosomal Recessive Polycystic Kidney Disease □ VHL1: Sanger and Del/Dup: VHL ☐ PKDL: Linkage Analysis for informativity **PTEN-Related Disorders** ☐ PKDPL: Prenatal Linkage (see Prenatal Specimen Requirements) ☐ PTEN1: Sanger and Del/Dup: PTEN **FATHER:** Name and DOB (mm/dd/yyyy) Fragile X syndrome ☐ FRX: PCR and, if needed, reflexive confirmatory testing by MOTHER: Name and DOB (mm/dd/yyyy) Southern blot analysis: FMR1 **Known Variant Testing** □ KT2: Targeted detection of a specific, previously identified known variant in any gene that is available at our lab by Sanger sequence, MLPA, and/or FISH analysis (Complete Previous Testing History: Page 1) □ KT2-NG: Targeted testing for a known variant with deep coverage of the alleles and detection of mosaicism for a variant present in at least 3% of alleles (Complete Previous Testing History: Page 1) □ RT2: Targeted RNA-based testing for VOUS found during Next Generation Sequencing (Complete Previous Testing History: Page 1) □ PT2: Prenatal testing (see Prenatal Specimen Requirements; Complete Previous Testing History: Page 1) ☐ MCC: Blood specimen for mother provided for maternal cell contamination studies (required if not previously tested) ☐ Other (unlisted options, please indicate below) **Please contact lab before selecting this option** Additional Information **Test Description Key:** Please contact the lab via phone (205) 934-5562 or via email at medgenomics@uabmc.edu if you have any Next Generation Sequencing (NG) questions when completing this form. Sanger Sequencing (Sanger) For additional information, visit our website at www.uab.edu/medicine/genetics/medical-genomics-laboratory Deletion/Duplication analysis (Del/Dup) **Specimen Requirements Accepted Prenatal Specimens** Prenatal Specimen Information: Specimen requirements vary based on test requested; please see our website □ Amniotic Fluid □ Direct CVS (cleaned) for more details. ☐ Cultured Amniocytes □ Cultured Villus Cells -Direct CVS: minimum 10 mg cleaned villi Location of back-up culture (required): -Direct amniotic fluid: minimum 10 ml fluid -Cultured CVS: Two T25 flasks (>70% confluent) Sample Collected Date (required): -Cultured amniocytes: Two T25 flasks (>70% confluent) Specimen Information: **Accepted Specimens** Specimen requirements vary based on test requested; please see our website ☐ Peripheral Blood (EDTA); # Tubes: for more details □ Extracted DNA; Source: -Blood: 3-6ml EDTA (must arrive within 60-72 hours of collection for ☐ Other, please describe: RNA-based tests) -DNA: extracted from lymphocyte cells, a minimum of 25ul at 3µg, O.D. value at Please note: failure to provide a date of collection can delay release of results 260:280nm ≥1.6 (must be extracted in a CLIA or equivalent certified lab) -Sperm (for KT2-NG only): Fresh, sterile semen collection using a local sperm Sample Collected Date (required): bank/cryobank facility

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Name:	(First)	(MI)	(Last)		DOB: (MM)	/DD/YY)	
Billing							
		☐ Please	hold sample until furthe	er notice from the	ordering faci	lity.	
			Important I	Information			
By completing this form, you agree that you have discussed the MGL's billing policies with your patient. Credit card information MUST be provided with sample submission for self-pay clients. Please note : If you are paying via self-payment or requesting a benefits investigation, there will be a 3-5 working day delay on the initiation of your test. Requests for cancellation of ongoing testing must be submitted to the laboratory within three working days of specimen arrival . Individuals or institutions submitting requests after the three working day window may still incur charges for the cost of testing. Full information on the billing policies is available at www.uab.edu/medicine/genetics/medical-genomics-laboratory							
☐ Institution	onal Bill						
		☐ Please o	check box if billing institu	ution should receiv	e report dire	ectly	
Institution:					PO# (if applic	able):	
Address:							
City:				State:		Zip:	
Contact (Nam	e and Title):					Preferred method of contact: ☐ Email ☐ Phone	
Email:			Phone:			Fax:	
☐ Self-Pay	ment Enclosed						
		□ Visa	☐ MasterCard	☐ Discover	☐ Americ	an Express	
Name as it ap	pears on card:						
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Email:						Phone:	
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☐ Please ched	ck box if you would <u>not</u>		verification/authorization t				
ICD-10 Code	es (required) :	Please sen	d a legible copy of the pa	tient's insurance car	d, front and b	ack.	
Important Considerations for Insurance Billing							
For a list of contracted insurance companies, please visit our website or call our billing coordinator at 205-934-5523. As insurance prices are not listed, please call the billing coordinator to request a quote, if needed. The MGL will contact the insurance provider to inquire regarding the CPT code coverage for all samples submitted for insurance payment. The							

healthcare provider will be contacted with the copay/deductible and also in cases where the insurance provider denies coverage of the requested

Please note: An insurance verification is not a guarantee of payment. Out of State Medicaid is not accepted under any circumstances. All RUSH fees

codes or supporting documents are required from the provider to confirm coverage. This service is not offered for prenatal samples.

must be paid up front. By completing this form, you agree that you have discussed the MGL's billing policies with your patient.

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www.genetics.uab.edu/medgenomics

Informed Consent for Genetic Testing

Tel: (205) 934-5562 Fax: (205) 996-2929

This form does not need to be returned to the Medical Genomics Laboratory if Informed Consent portion of the Test Request form has been signed.*

I hereby consent for:		
Name:	DOB:	Gender:

To participate in genetic testing for the following RNA/DNA-based cascade of tests ordered by my physician at the University of Alabama at Birmingham (UAB) Medical Genomics Laboratory (MGL):

Genetic Tests:		

I understand that:

- 1. Any biological samples submitted for genetic testing (e.g., blood, cheek cells, saliva, amniotic fluid, chorionic villi, tumor, and/or tissue) will be removed from me and/or my minor child(ren) using standard techniques which carry their associated risks.
- 2. Any samples obtained will be used for the purpose of attempting to determine if I and/or members of my family carry genetic changes in the disease genes ordered by my physician.
- 3. The genetic tests performed at the MGL are the most sensitive developed and are highly specific. However, sensitivity and specificity are test-dependent. Additional testing details and the specific detection rates of each test can be found at www.genetics.uab.edu/medgenomics.
- 4. The following are possible outcomes for the specific tests listed above:

Positive	Unknown Significance	Negative
This is an indication that I may be predisposed to or have the specific disease, or condition tested. Further testing may be needed to confirm the diagnosis.	There may be a possibility that the laboratory findings will be ambiguous or of unknown significance. This may require additional testing from me or my family members. In rare circumstances, findings may be suggestive of a condition different than the diagnosis that was originally made.	technology and incomplete knowledge of genes, some changes in RNA/DNA or protein

- 5. In other cases, the RNA/DNA test is unable to identify an abnormality although the abnormality may still exist. This event may be due to incomplete knowledge of the gene structure or an inability of current technology to identify certain types of mutations in the gene. When clinically necessary, the MGL may use a method called linkage analysis. This method is not a direct test, but will report the probability that you and/or family members have an inherited disease or disorder. In some families, the markers used in linkage analysis may be uninformative. If so, linkage testing cannot provide results for the family members in question.
- 6. The RNA/DNA analysis performed by the MGL is specific for the genetic test listed above and in no way guarantees my health or the health of my living or unborn children. The MGL cannot be responsible for an erroneous clinic diagnosis made elsewhere.
- 7. The tests performed at the MGL are expanded and improved continuously. The tests offered are not considered research but are considered the best and newest laboratory service that can be offered. Genetic testing is complex and utilizes specialized materials so there is always some very small possibility that the test will not work properly or that an error will occur. There is a low error rate (perhaps 1 in 1000 samples) even in the best laboratories. Additionally, in very rare instances, this test may reveal an important genetic change that is not directly related to the clinical reason for ordering this test. This would be considered an incidental finding. The MGL reserves the right to report these incidental findings if they are clinically relevant to the patients and/or their families In such instances, these results will be discussed with my healthcare provider and additional testing may be recommended. My signature acknowledges my voluntary participation in this test, but in no way releases the laboratory and staff from the MGL from their professional or ethical responsibility to me.
- 8. The MGL does not return DNA samples to individuals or physicians. While the MGL is not a specimen banking facility, in some cases it may be possible for the laboratory to reanalyze my remaining DNA upon request. The request for additional studies must be ordered by my referring physician/counselor and there will be an additional fee.



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- 9. An aliquot of my DNA/RNA may be used for validation, educational and/or research purposes. For some molecular genetic tests, a synopsis of clinical information and test results may be included in HIPAA-compliant, de-identified public databases as part of the National Institute of Health's effort to improve diagnostic testing and our understanding of the relationships between genetic changes and clinical symptoms. If I would like to opt out of participation, I can contact the MGL via email at medgenomics@uab.edu or calling the laboratory at 205-934-5562.
- 10. Because of the complexity of genetic testing and the important implications of the test results, results will only be reported to me through a physician, genetic counselor, or a certified genetics professional. The results are confidential to the extent allowed by law. They will only be released to other medical professionals or other parties with my written consent or as otherwise allowed by law. Participation in testing is completely voluntary.
- 11. **For Prenatal Testing:** If prenatal diagnosis is being performed, fetal cells obtained by chorionic villus sampling or amniocentesis will be used. In order to perform accurate prenatal diagnosis, biological samples are required for the fetus as well as from the affected individual in the family and from the biological mother.
- 12. I and/or my physician/counselor have signed the informed consent portion of the test order form indicating that we have discussed the items on this document and I will also receive a copy of this consent form.

Subject's Signature Date		Physician's Signature Date		
Please Print Subject's Name		Please Print Physician's Name		
Assent of Parent	Date	Genetic Counselor's Signature	Date	
Assent of Child	 Date	Please Print Genetic Counselor's	 Name	

