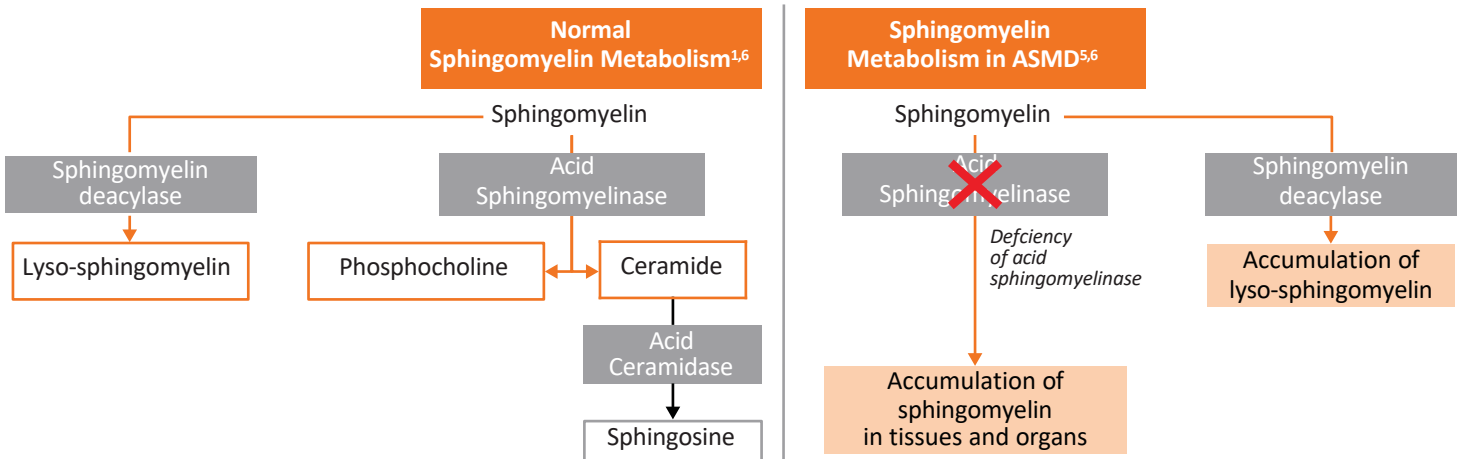


# Acid Sphingomyelinase Deficiency Biomarker: Lyso-Sphingomyelin

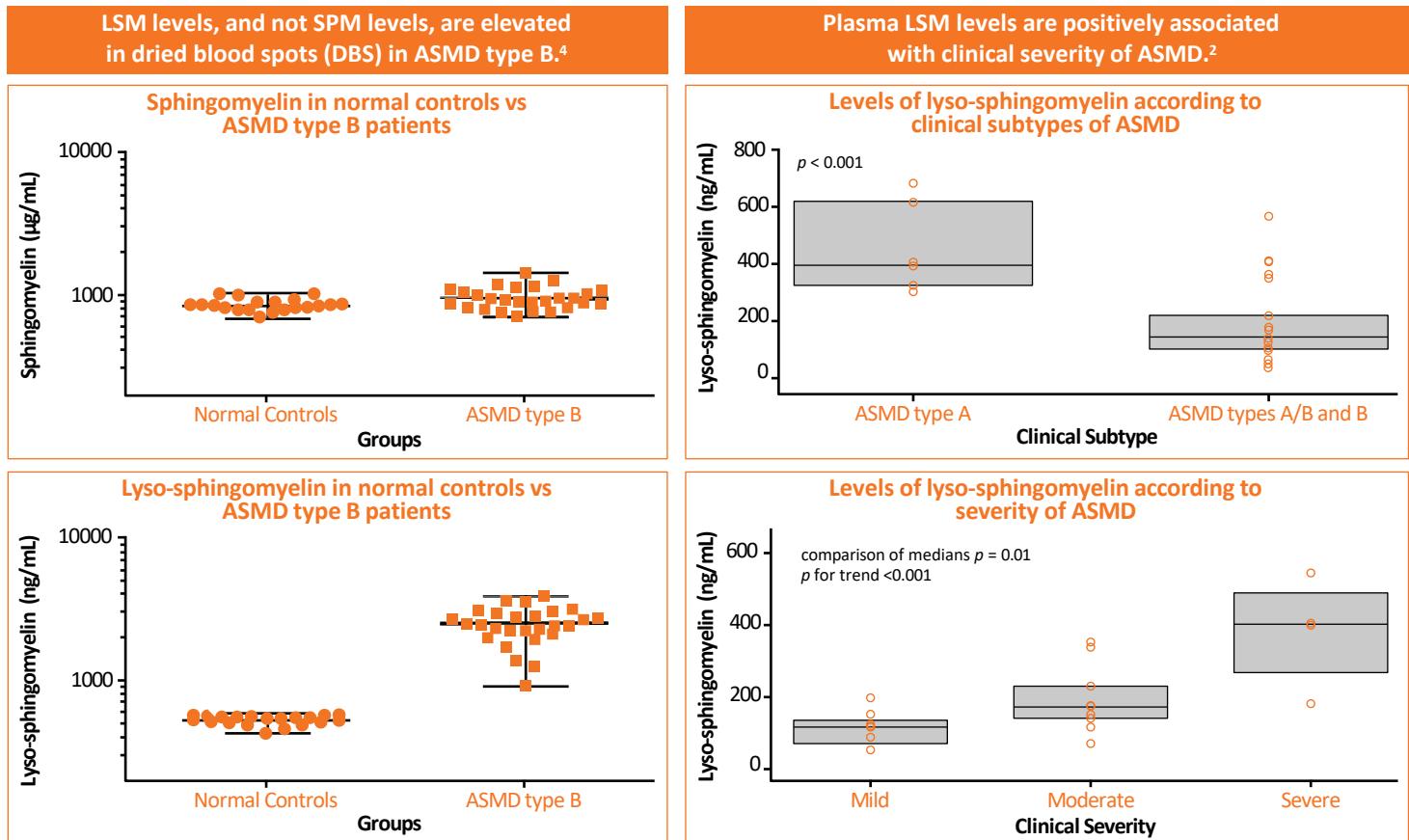
## Disease Overview

- Acid Sphingomyelinase Deficiency (ASMD) is a rare lysosomal storage disease caused by deficient enzyme activity in the lysosomal hydrolase acid sphingomyelinase (ASM).<sup>1,2,3</sup>
- ASM is encoded by the sphingomyelin phosphodiesterase 1 (*SMPD1*) gene. Bi-allelic pathogenic variants in *SMPD1* lead to reduced ASM enzymatic activity and subsequent accumulation of its lipid substrate, sphingomyelin (SPM), and the de-acylated form, lyso-sphingomyelin (LSM).<sup>2</sup>
- These lipids can accumulate in multiple cell types and organs throughout the body, resulting in multi-systemic disease manifestations such as hepatosplenomegaly, thrombocytopenia, interstitial lung disease, and dyslipidemia.<sup>1,4</sup>
- SPM accumulation is not elevated in plasma, whole blood, or urine in ASMD patients, highlighting the need for a specific body fluid biomarker for ASMD.<sup>4</sup>



## Lyso-sphingomyelin as a biomarker in ASMD

- LSM is a specific biomarker for ASMD.<sup>2</sup>
- LSM is detectable at elevated levels in ASMD patient blood samples compared to controls.<sup>4</sup>



## Testing Options for Lyso-sphingomyelin

Some of the laboratories offering testing for lyso-sphingomyelin are listed below. There may be other testing appropriate for your patient, and this is not an endorsement of any specific laboratory. Other testing options can be found at [www.concertgenetics.com](http://www.concertgenetics.com) or [www.ncbi.nlm.nih.gov/gtr](http://www.ncbi.nlm.nih.gov/gtr). Consult each laboratory for a full range of options. Content is current at time of publication, and tests may not be available in all states; please call laboratory to confirm test availability, sample shipping information, and all other logistics. Sanofi does not review or control the content of non-Sanofi websites. This listing does not constitute an endorsement by Sanofi of information provided by any other organizations.

Laboratory	Test Name and Code	Sample Requirements
ArchimedLife	Lyso-SPM	DBS card: 5 circles (minimum 3) <i>Note: this European lab does not yet have CLIA certification. Therefore, all results are reported on a research basis.</i>
Centogene	LSM-509** with reflex to LSM	WB: 1 mL EDTA (lavender) tube; DBS card: 10 circles
Mayo Clinic Laboratories	Oxysterols (includes quantitative LSM and qualitative LSM-509**)	WB: 1 mL EDTA (lavender) or ACD (yellow) or sodium heparin (green) tubes; Frozen Plasma: min 0.25 mL; DBS card: 2 circles
Rare Disease Specialty Testing Program (performed at Labcorp)	Lyso-SM	Plasma: 1 ml (from EDTA/lavender tube)

Laboratory	Kits	Avg TAT	Mobile Blood	Billing	Contact
ArchimedLife	DBS	10 d	No	No Charge*	E: <a href="mailto:eumedicalseervices@sanofi.com">eumedicalseervices@sanofi.com</a> W: <a href="http://webportal.archimedlife.com">http://webportal.archimedlife.com</a> (account required)
Centogene	Blood, DBS	7 d	No	Inst, Self-pay, Ins	P: 617-580-2102 E: <a href="mailto:customer.supportUS@centogene.com">customer.supportUS@centogene.com</a> W: <a href="http://www.centogene.com">www.centogene.com</a>
Mayo Clinic Laboratories	DBS	2-8 d	No	Inst, Ins <sup>&amp;</sup>	P: 800-533-1710 E: <a href="mailto:mcl@mayo.edu">mcl@mayo.edu</a> W: <a href="http://www.mayocliniclabs.com">www.mayocliniclabs.com</a>
Rare Disease Specialty Testing Program (performed at Labcorp)	Blood <sup>#</sup>	12 d	No~	No charge* (account required)	P: 888-681-1701 E: <a href="mailto:RareDiseaseProgram@labcorp.com">RareDiseaseProgram@labcorp.com</a>

**Note: LSM may be bundled with a panel of biomarkers (oxysterols) or LSM-509\*\*, to allow for evaluation for both ASMD and other disorders of sphingolipid metabolism.**

\*This testing is performed at no charge; local charges may apply for sample collection, processing, or shipping. \*\*LSM-509 is an analog of LSM and is elevated in both ASMD and Niemann-Pick disease type C. <sup>#</sup>Individual testing supplies can be ordered. <sup>~</sup>Phlebotomy is covered if performed at a Patient Service Center. <sup>&</sup>Insurance can be billed in some cases, but an account is required.

Avg = Average; CLIA = Clinical Laboratory Improvement Amendments; d = days; DBS = dried blood spot; Ins = Insurance; Inst = Institution; LSM = Lyso-sphingomyelin; TAT = turnaround time; WB = whole blood

**References:** 1. Schuchman EH, et al. Mol Genet Metab. 2017;120 (1-2):27-33; 2. Breilyn MS, et al. Mol Genet Metab Rep. 2021;28:100780; 3. Wasserstein M, et al. Mol Genet Metab. 2019;126(2):98-105; 4. Chuang WL, et al. Mol Genet Metab. 2014;111:209-11; 5. McGovern MM et al. Orphanet J Rare Dis 2017;12(1):41; 6. Heringdorf D, et al. Biochim Biophys Acta. 2002;1582(1-3):178-89.