

**ProBabyDNA** 



**Breast Milk Sensor**

Maria Musterfrau

DEMO\_ML

**ProGenom**   
www.progenom.com



## COVER LETTER

Dear Ms. Musterfrau,

Your sample for the analysis arrived on 25/11/2020 in the laboratory and was evaluated according to the highest laboratory quality standards. The results were evaluated and released by two independent geneticists and molecular biologists. After obtaining the results, your personal report was compiled. We hereby convey the results to you in the format of your choice.

We would like to thank you for your trust and hope that you are satisfied with our service. We are always open to questions and suggestions. Please do not hesitate to contact us. We value your feedback. This is the only way we can continuously improve our services.

We hope the analysis meets your expectations.

Kind regards,

Dr. Daniel Wallerstorfer BSc.  
Laboratory Director

Florian Schneebauer, MSc.  
Laboratory Manager

---

# Breast Milk Sensor

---

Analysis report

**Maria Musterfrau | Date of birth: 01/01/1990**

Order number:

**DEMO\_ML**

**This report contains personal medical information that is highly confidential. Data protection must be ensured.**



**INTRODUCTION**

**THE RESULT**

**SCIENCE**

**ADDITIONAL INFORMATION**



# BREAST MILK

The right nutrients for your baby



## The role of breast milk in your baby's development

**During the first six months of life, your baby is completely dependent on a carefully balanced mix of nutrients in the breast milk. It contains everything your baby needs in either perfect, or close to perfect amounts to ensure fast development of your baby's body and brain.**

A number of environmental factors, however, influence the amount of the essential Omega 3 fatty acids in the mother's milk and numerous scientific studies have shown, that this can have a negative effect on the development of the child. This important building block is required to build new cell membranes in cells of all tissues of the body and especially in the development of neurons/brain cells of the brain.

If the supply of Omega 3 fatty acids is too low during the time the brain develops and needs to build new brain cells, the overall development can be slowed and result in a generally lower intelligence quotient (IQ), lower Omega 3 content in red blood cells, impaired vision development and slower cognitive development. Even if the amount of Omega 3 is increased at later stages of life, the effects of slower development during the early stages of life will remain.

This is why it is especially important for parents to ensure that the baby gets all of the necessary nutrients from the mother's milk during the time of breastfeeding. Testing mother's milk for Omega 3 content is an advanced and reliable way of determining the Omega 3 concentration and allows the mother to increase the amount of Omega 3 fatty acids through the use of nutritional supplements if necessary.

### **Omega 3 and Development**

Omega three fatty acids have a number of roles in the development of your child:

#### **Building new cell membranes**

Omega 3 fatty acids are an essential building block for cell membranes. During the first 6 months of life your baby will only get Omega 3 from the mother's milk and it needs enough to build about 2 000 000 000 000 new cells.

#### **Brain Development and IQ**

Especially brain cells require a lot of Omega 3 fatty acids to form. Only during the first 2 years of life new brain cells are formed in various regions of the brain (cerebellum, olfactory bulb, prefrontal cortex, and hippocampus). After the age of 2 the new formation stops and any development that was delayed during these 2 years can never be made up for later in life. Scientific studies have shown that Babies fed with high Omega 3 Milk can have up to 6 IQ points more.

## Vision development

Omega 3 also plays an important role in the development of the eyes. Studies have shown, that children with a higher Omega three content in their blood develop clearness of vision faster than babies with low Omega 3 content.



**INTRODUCTION**

**THE RESULT**

**SCIENCE**

**ADDITIONAL INFORMATION**





## RESULT

Find out everything about our analysis and your result here



# The Result - Month 18

Here you see the result of the Omega-3 measurement (DHA) of your sample.

◦ 3rd Trimester

◦ BIRTH

◦ Month 1

◦ Month 2

◦ Month 3

◦ Month 4

◦ Month 5

◦ Month 6

◦ Month 7

◦ Month 8

◦ Month 9

◦ Month 10

◦ Month 11

1st Birthday

BREAST MILK

SOLID FOOD

Month 18 analysis result

TOO LOW

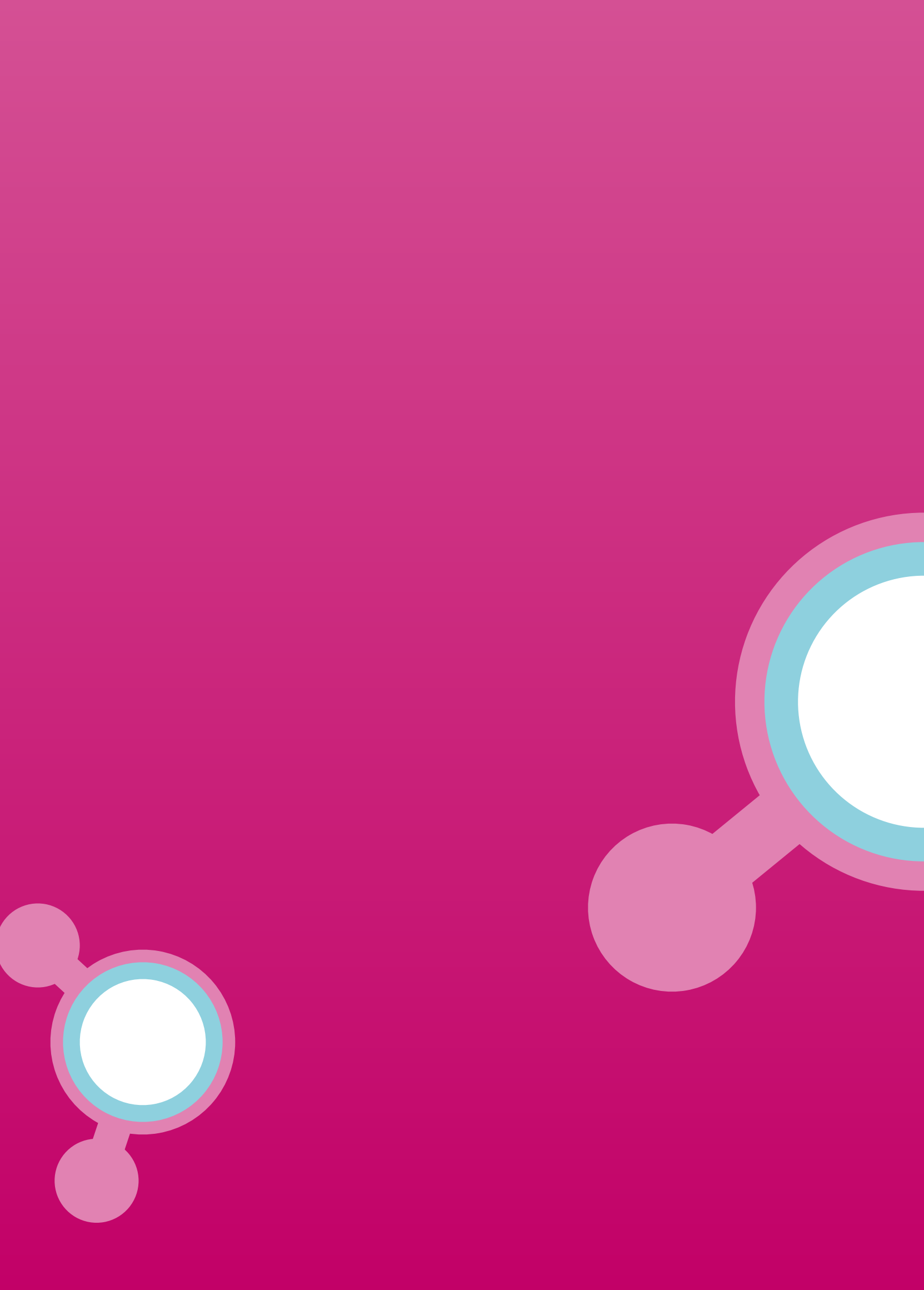
MEDIUM

OPTIMAL



Your result: 0.03% Omega-3 (DHA/EPA)

**The omega 3 content is too low and should be increased by supplementation with omega 3 capsules and change in nutrition.**





**INTRODUCTION**

**THE RESULT**

**SCIENCE**

**ADDITIONAL INFORMATION**



# SCIENCE

This chapter shows the science behind the test.



## References

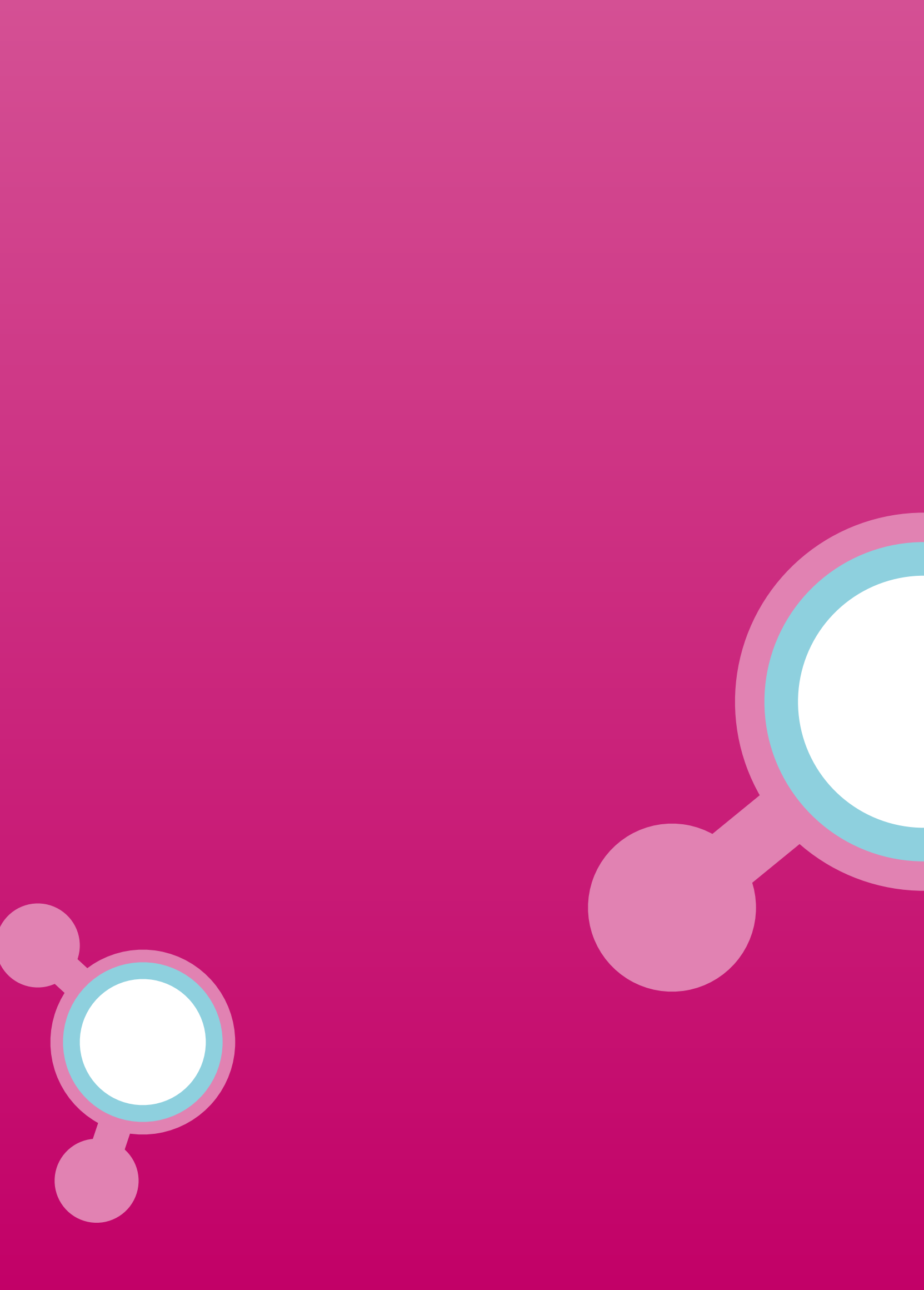
**All our analyses and treatment recommendations are scientifically validated. Here are some of the relevant literature references for your information.**

- ACOG Updates Definitive Guide to Pregnancy: Your Pregnancy & Birth, Fourth Edition, Gives Women the Latest News on Genetic Disorders, Prenatal Tests, DOs and DON'Ts, and Exercise
- Bell et al., The new dietary fats in health and disease. *J Am Diet Assoc.* 1997, 97:280–286. quiz 287–288.
- Berman et al., Docosahexaenoic acid confers neuroprotection in a rat model of perinatal hypoxia-ischemia potentiated by *Escherichia coli* lipopolysaccharide-induced systemic inflammation. *Am J Obstet Gynecol.* 2010;202:469.e1–e6.
- Berman et al., Treatment with docosahexaenoic acid after hypoxia-ischemia improves forepaw placing in a rat model of perinatal hypoxia-ischemia. *Am J Obstet Gynecol.* 2010;203:385.e1–e5.
- Bernard et al. Breastfeeding, Polyunsaturated Fatty Acid Levels in Colostrum and Child Intelligence Quotient at Age 5-6 Years. *J Pediatr.* 2017 Apr;183:43-50.e3.
- Bisgaard et al. Fish Oil-Derived Fatty Acids in Pregnancy and Wheeze and Asthma in Offspring. *N Engl J Med.* 2016 Dec 29;375(26):2530-9.
- Bloomingdale et al., A qualitative study of fish consumption during pregnancy. *Am J Clin Nutr.* 2010, 92:1234–1240.
- Bouwstra et al. Neurologic condition of healthy term infants at 18 months: positive association with venous umbilical DHA status and negative association with umbilical trans-fatty acids. *Pediatr Res.* 2006 Sep;60(3):334-9. Epub 2006 Jul 20.
- Brauholtz et al., Are randomized clinical trials good for us (in the short term)? Evidence for a “trial effect” *J Clin Epidemiol.* 2001;54:217–224.
- Bulstra et al., The effects of 3g eicosapentaenoic acid daily on recurrence of intrauterine growth retardation and pregnancy induced hypertension. *Br J Obstet Gynaecol.* 1995;102:123–126.
- Coletta et al., Omega-3 Fatty Acids and Pregnancy, *Rev Obstet Gynecol.* 2010 Fall, 3(4): 163–171.
- da Rocha et al. High dietary ratio of omega-6 to omega-3 polyunsaturated acids during pregnancy and prevalence of post-partum depression. *Matern Child Nutr.* 2012 Jan;8(1):36-48.
- De Giuseppe et al. n-3 LC-PUFA supplementation: effects on infant and maternal outcomes. *Eur J Nutr.* 2014 Aug;53(5):1147-54.
- Dunstan et al. Cognitive assessment of children at age 2(1/2) years after maternal fish oil supplementation in pregnancy: a randomised controlled trial. *Arch Dis Child Fetal Neonatal Ed.* 2008 Jan;93(1):F45-50. Epub 2006 Dec 21.
- Dunstan et al. Fish oil supplementation in pregnancy modifies neonatal allergen-specific immune responses and clinical outcomes in infants at high risk of atopy: a randomized, controlled trial. *J Allergy Clin Immunol.* 2003 Dec;112(6):1178-84.
- Freeman et al., Omega-3 fatty acids and supportive psychotherapy for perinatal depression: a randomized placebo-controlled study. *J Affect Disord.* 2008;110:142–148.
- Frithsen et al., Awareness and implications of fish consumption advisories in a women’s health setting. *J Reprod Med.* 2009, 54:267–272.
- Furuholm et al. Fish oil supplementation in pregnancy and lactation may decrease the risk of infant allergy. *Acta Paediatr.* 2009;98:1461–1467.

- Golding et al., High levels of depressive symptoms in pregnancy with low omega-3 fatty acid intake from fish. *Epidemiology*. 2009;20:598–603.
- Graham et al., A systematic review of the role of intrapartum hypoxia-ischemia in the causation of neonatal encephalopathy. *Am J Obstet Gynecol*. 2008;199:587–595.
- Greenberg et al., Omega-3 fatty acid supplementation during pregnancy. *Rev Obstet Gynecol*. 2008, 1:162–169.
- Harper et al., Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Omega-3 fatty acid supplementation to prevent recurrent preterm birth. *Obstet Gynecol*. 2010;115:234–242.
- Hauner et al. Effect of reducing the n-6:n-3 long-chain PUFA ratio during pregnancy and lactation on infant adipose tissue growth within the first year of life: an open-label randomized controlled trial. *Am J Clin Nutr*. 2012 Feb;95(2):383-94.
- Helland et al. Maternal supplementation with very-long-chain n-3 fatty acids during pregnancy and lactation augments children's IQ at 4 years of age. *Pediatrics*. 2003;111:e39–e44.
- Helland et al., Similar effects on infants of n-3 and n-6 fatty acids supplementation to pregnant and lactating women. *Pediatrics*. 2001;108:E82
- Helland et al. Effect of supplementing pregnant and lactating mothers with n-3 very-long-chain fatty acids on children's IQ and body mass index at 7 years of age. *Pediatrics*. 2008 Aug;122(2):e472-9.
- Hibbeln et al. Maternal seafood consumption in pregnancy and neurodevelopmental outcomes in childhood (ALSPAC study): an observational cohort study. *Lancet*. 2007;369:578–585
- Hibbeln et al. Seafood consumption, the DHA content of mothers' milk and prevalence rates of postpartum depression: a cross-national, ecological analysis. *J Affect Disord*. 2002 May;69(1-3):15-29.
- Innis et al., . Essential n-3 fatty acids in pregnant women and early visual acuity maturation in term infants. *Am J Clin Nutr*. 2008, 87:548–557.
- Jacobson et al. Beneficial effects of a polyunsaturated fatty acid on infant development: evidence from the inuit of arctic Quebec. *J Pediatr*. 2008 Mar;152(3):356-64.
- Jensen CL. Effects of n-3 fatty acids during pregnancy and lactation, *Am J Clin Nutr*. 2006, 83(6 suppl):1452S–1457S.
- Koletzko et al. Current information and Asian perspectives on long-chain polyunsaturated fatty acids in pregnancy, lactation, and infancy: systematic review and practice recommendations from an early nutrition academy workshop. *Ann Nutr Metab*. 2014;65(1):49-80.
- Koletzko et al. Should Women Providing Milk to Their Preterm Infants Take Docosahexaenoic Acid Supplements? *Clin Perinatol*. 2017 Mar;44(1):85-93.
- Koletzko et al., Lipid Intake Working Group
- Koletzko et al., World Association of Perinatal Medicine Dietary Guidelines Working Group, authors. The roles of long-chain polyunsaturated fatty acids in pregnancy, lactation and infancy: review of current knowledge and consensus recommendations. *J Perinat Med*. 2008;36:5–14.
- Lauritzen et al. Maternal fish oil supplementation in lactation and growth during the first 2.5 years of life. *Pediatr Res*. 2005 Aug;58(2):235-42. Epub 2005 Jul 8.
- Lederman et al. Relation between cord blood mercury levels and early child development in a World Trade Center cohort. *Environ Health Perspect*. 2008;116:1085–1091.
- Bergmann et al. Does maternal docosahexaenoic acid supplementation during pregnancy and lactation lower BMI in late infancy? *J Perinat Med*. 2007;35(4):295-300.
- Mahaffey et al., Fish and shellfish as dietary sources of methylmercury and the omega-3 fatty acids, eicosapentaenoic acid and docosahexaenoic acid: risks and benefits. *Environ Res*. 2004;95:414, 428.
- Makrides et al. DOMInO Investigative Team, authors. Effect of DHA supplementation during pregnancy on maternal depression and neurodevelopment of young children: a randomized controlled trial. *JAMA*. 2010;304:1675–1683.
- Markhus et al. Low omega-3 index in pregnancy is a possible biological risk factor for postpartum depression. *PLoS One*. 2013 Jul 3;8(7):e67617.
- Mozaffarian et al., Fish intake, contaminants and human health-evaluating the risks and the benefits. *JAMA*. 2006;296:1885–1899.
- Much et al. Effect of dietary intervention to reduce the n-6/n-3 fatty acid ratio on maternal and fetal fatty acid profile and its relation to offspring growth and body composition at 1 year of age. *Eur J Clin Nutr*. 2013 Mar;67(3):282-8.

- Nesheim et al., *Seafood Choices: Balancing Benefits and Risks*. Washington, DC: The National Academies Press, 2007.
- Oken et al. Associations of seafood and elongated n-3 fatty acid intake with fetal growth and length of gestation: results from a US pregnancy cohort. *Am J Epidemiol*. 2004 Oct 15;160(8):774-83.
- Oken et al. Maternal fish consumption, hair mercury, and infant cognition in a U.S. Cohort. *Environ Health Perspect*. 2005 Oct;113(10):1376-80.
- Oken et al. Maternal fish intake during pregnancy, blood mercury levels, and child cognition at age 3 years in a US cohort. *Am J Epidemiol*. 2008 May 15;167(10):1171-81.
- Oken et al., Fish consumption, methylmercury and child neurodevelopment. *Curr Opin Pediatr*. 2008;20:178–183.
- Olsen et al., High liveborn birth weights in the Faeroes: a comparison between birth weights in the Faeroes and in Denmark. *J Epidemiol Community Health*. 1985;39:27–32.
- Olsen et al., Randomized clinical trials of fish oil supplementation in high risk pregnancies. Fish Oil Trials in Pregnancy (FOTIP) Team. *BJOG*. 2000;107:382–395.
- Olsen et al., Randomized controlled trial of effect of fish-oil supplementation on pregnancy duration. *Lancet*. 1992;339:1003–1007.
- Olsen et al. Gestational age in relation to marine n-3 fatty acids in maternal erythrocytes: a study of women in the Faroe Islands and Denmark. *Am J Obstet Gynecol*. 1991 May;164(5 Pt 1):1203-9.
- Olsen et al. Low consumption of seafood in early pregnancy as a risk factor for preterm delivery: prospective cohort study. *BMJ*. 2002 Feb 23;324(7335):447.
- Olsen SF. Is supplementation with marine omega-3 fatty acids during pregnancy a useful tool in the prevention of preterm birth? *Clin Obstet Gynecol*. 2004;47:768–774. discussion 881–882.
- Owen et al., The role of fatty acids in the development and treatment of mood disorders. *Curr Opin Psychiatry*. 2008;21:19–24.
- Ramakrishnan et al., Effects of docosahexaenoic acid supplementation during pregnancy on gestational age and size at birth; randomized, double-blind, placebo-controlled trial in Mexico. *Food Nutr Bull*. 2010;31(2 suppl):S108–S116.
- Roman et al., Omega-3 fatty acids and decidual cell prostaglandin production in response to the inflammatory cytokine IL-1beta. *Am J Obstet Gynecol*. 2006;195:1693–1699.
- Simopoulos et al., Essentiality of and recommended dietary intakes for omega-6 and omega-3 fatty acids. *Ann Nutr Metab*. 1999, 43:127–130.
- Smuts et al., A randomized trial of docosahexaenoic acid supplementation during the third trimester of pregnancy. *Obstet Gynecol*. 2003;101:469–479.
- Strain et al. Associations of maternal long-chain polyunsaturated fats, methyl mercury, and infant development in the Seychelles Child Development Nutrition Study. *Neurotoxicology*. 2008;29:776–782.
- Tanaka et al. Does breastfeeding in the neonatal period influence the cognitive function of very-low-birth-weight infants at 5 years of age? *Brain Dev*. 2009 Apr;31(4):288-93.
- Thornberg et al., Birth asphyxia: incidence, clinical course and outcome in a Swedish population. *Acta Paediatr*. 1995;84:927–932.
- US Environmental Protection Agency Office of Air, authors. *Mercury Study Report to Congress: Volume VII: Characterization of Human Health and Wildlife Risks from Mercury Exposure in the United States*. Washington, DC: US Environmental Protection Agency Office of Air; 1997. Dec
- US Food and Drug Administration Web Site, authors. What you need to know about mercury in fish and shellfish.
- van den Berg et al. Maternal fish consumption during pregnancy and BMI in children from birth up to age 14 years: the PIAMA cohort study. *Eur J Nutr*. 2016 Mar;55(2):799-808.
- Warstedt et al. High levels of omega-3 fatty acids in milk from omega-3 fatty acid-supplemented mothers are related to less immunoglobulin E-associated disease in infancy. *Acta Paediatr*. 2016 Nov;105(11):1337-1347.
- Wu et al. Declining diagnosis of birth asphyxia in California: 1991–2000. *Pediatrics*. 2004;114:1584–1590.
- Zhang et al. Omega-3 polyunsaturated fatty acid supplementation confers long-term neuroprotection against neonatal hypoxic-ischemic brain injury through anti-inflammatory actions. *Stroke*. 2010;41:2341–2347.







**INTRODUCTION**

**THE RESULT**

**SCIENCE**

**ADDITIONAL INFORMATION**



## **ADDITIONAL INFORMATION**

In this chapter you will receive useful information



## CERTIFICATIONS

# Certifications

Our laboratory is one of the most modern and automated laboratories in Europe and has numerous certifications and quality assurance systems that meet, and even exceed, international standards. The various areas of business are certified separately to the highest standards.

### Laboratory diagnostics, manufacturing & sales

Quality management system in accordance with ISO 9001:2015



### Licensed for medical genetics

Approved by the Federal Ministry of Health, Austria



### Cosmetic/genetic diagnostics and cosmetics manufacturing

Good manufacturing practice (GMP) in accordance with ISO 22716:2007



### Food supplement manufacturing

Management system for food safety in accordance with ISO 22000:2018





## Customer Service

### Questions or comments about our service?

Our customer service team is happy to help with any enquiries or problems. You can contact us in the following ways:

- Phone +41 (0) 41 525 100.1
- [office.ch@progenom.com](mailto:office.ch@progenom.com)

Our team is looking forward to your call. Customer satisfaction is our first priority. If you are not fully satisfied with our service, please let us know. We will do our best to help find a satisfactory solution to your problem.

**Contact | Impressum**  
ProGenom GmbH  
Riedstrasse 1  
6343 Rotkreuz  
SWITZERLAND



## Technical details

### Order number

DEMO\_ML

### Date of birth

01/01/1990

### Established analysis methods

qRT-PCR, DNA sequencing, fragment length analysis, CNV assay, GC-MS, Immunocap ISAC, Cytolisa

### Report generated

22/03/2021 13:35:08

### Product codes

B1BAB, B2MIL, B4PRE

### Current version

V538

### Ordering company

ProGenom GmbH  
Riedstrasse 1  
6343 Rotkreuz  
SWITZERLAND

### Analyzing company

DNA Plus - Zentrum für Humangenetik  
Georg Wrede Strasse 13  
83395 Freilassing  
Deutschland

### Laboratory Director

Dr. Daniel Wallerstorfer Bsc.

### Laboratory Manager

Florian Schneebauer, MSc.

**NOTES:**









ProBabyDNA 



ProGenom   
www.progenom.com

Breast Milk Sensor  
Maria Musterfrau  
DEMO\_ML