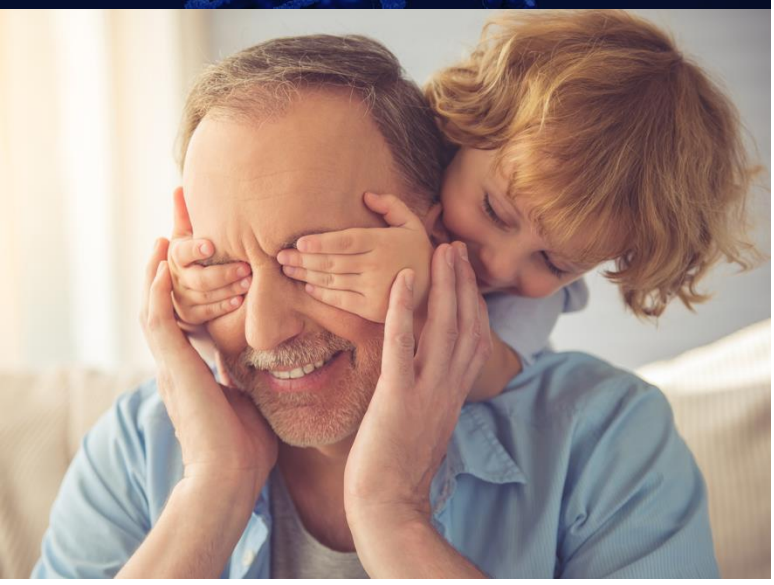


diabegen™

Precision medicine for type 2 diabetes

Patia presents diabegen™, a genomic tool that analyzes the main genetic variants associated with type 2 diabetes and offers the physician individualized considerations for a precise intervention in the management of the disease.

In recent years, multiple scientific publications have described genotype/phenotype associations in the development of type 2 diabetes and its complications. **Patia** has selected genetic variants associated with certain glycemic features and clinical implications, to provide relevant information for the management of type 2 diabetes

Genomics for intervention

Type 2 diabetes is a complex disease, for which direct and indirect genotype-phenotype associations have been identified: genotype/symptomatology of the disease, genotype/cellular functions

A sample of the patient's DNA provides useful information for matching treatment to the patient's medical history and other complementary tests.

diabegen™ benefits

The results report allows:

- **Precise intervention in the patient's lifestyle**
- **Treatment optimization**
- **Consideration of other clinical tests**
- **Patient segmentation**

Clinical indication :
Individual diagnosed with DT2, pre-diabetes or high glycemia

Sampling :

Buccal epithelial cells (swab) or blood (EDTA tube)

Results available in:
12 business days

Scientific reliability

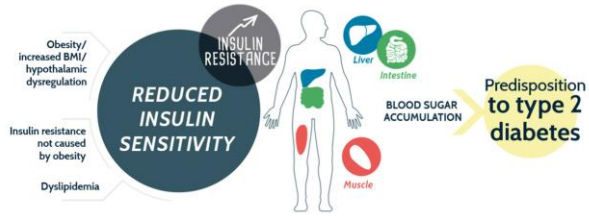
diabegen™ has been developed in collaboration with scientists and endocrinologists at The Broad Institute of MIT and Harvard, (Cambridge, USA) and The Massachusetts General Hospital (Boston, USA):

- Sci Rep 2019, 9(1):2748.
- Nature 2014, 506(7486):97-101.
- JAMA 2014,311(22):2305-2314.
- Nat Genet. 2014, 46(3):234-244.
- Nat Genet. 2012, 44(9):981-990.
- PLoS Genet. 2015,11(12):e1005696.

diabegen™ analyses genetic polymorphisms, selected for their relevant association with type 2 diabetes

ADCY5
KCNQ1
TCF7L2
HHEX/IDE
CDKN2A/B
WFS1
INS-IGF2
HNF1A
SLC30A8
IGF2BP2
CDKAL1
JAZF1
KCNJ11

FTO
PPARG
SLC16A11



"Genotype information, along with clinical criteria, is a powerful tool in the hands of the physician for the management of the patient diagnosed with type 2 diabetes or pre-diabetes"

Mirella G. Zulueta, MD, PhD Patia's Medical Director

Recommendations informed by genotype

The results report provides relevant information for the physician on lifestyle (with specific suggestions for nutrition and physical exercise), supplements, pharmacological indications and other clinical tests to be assessed in the patient's entire medical history.

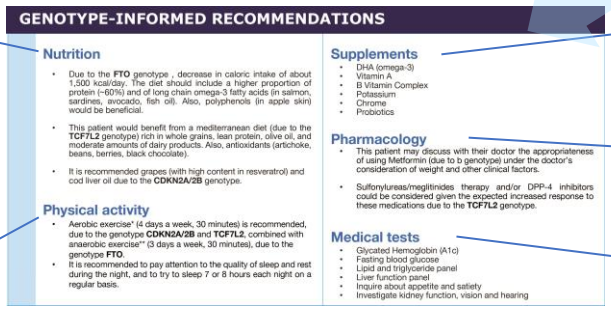
Nutrition

Optimal nutrients to be included in the patient's eating habits and others to be excluded from their diet

Physical activity

Specific indications of recommended exercise type according to genotype (aerobic or anaerobic)

Personalized considerations



Supplements

Food supplements containing minerals and vitamins suitable for intervention

Pharmacology

Indication of the patient's suitability and response to certain treatments

Other medical test

Complementary laboratory tests

Scientific references for personalized considerations

diabegen™ considerations are based on an extensive review of scientific publications in which the association genotype/phenotype is shown, relating each genetic variant to the development of type 2 diabetes, both directly and indirectly with clinical symptoms and cellular functions.

DIET Araujo Almeida V et al. Comparison of Nutrigenomics Technology Interface Tools for Consumers and Health Professionals: A Sequential Explanatory Mixed Methods Investigation. Journal of Meidcal Internet Research, Genomics and Bioinformatics for Clinical Use. 2019, Vol 21, No 6. Johnston KL. Possible role for apple juice phenolic compounds in the acute modification of glucose tolerance and gastrointestinal hormone secretion in humans. Journal of the Science of Food and Agriculture, Volume 82, Issue 15 , Pages 1800 - 1805, 23 Oct 2002. Knekt P et al. Flavonoid intake and risk of chronic diseases American Journal of Clinical Nutrition, Vol. 76, No. 3, 560-568, September 2002. 13th Congress of the International Society of Nutrigenetics/Nutrigenomics (ISNN). July 12-13, 2019, Cambridge, UK. Abete I et al. Recent Advances in Nutrigenetics and Nutrigenomics. Progress in Molecular Biology and Translational Science, 2012. Deeb SS. A Pro12Ala substitution in PPARgamma2 associated with decreased receptor activity, lower body mass index and improved insulin sensitivity. Nat Genet 1998;20(3):284-287. Di Renzo L et al. Influence of FTO rs9939609 and Mediterranean diet on body composition and weight loss: a randomized clinical trial. Journal of Transiational Medicine 2018, Vol 16, Article number: 308 . Doo M. Obesity: Interactions of Genome and Nutrients Intake. Prev Nutr Food Sci. 2015 Mar; 20(1): 1–7. Fatema K et al. Glycemic, non-esterified fatty acid (NEFA) and insulinemic responses to watermelon and apple in type 2 diabetic subjects. Asia Pac J Clin Nutr. 2003;12 Suppl:S53. Fu Z. Genistein Induces Pancreatic -Cell Proliferation through Activation of Multiple Signaling Pathways and Prevents InsulinDeficient Diabetes in Mice. Endocrinology 2010; 151(7):3026-3037. Fu Z. Genistein Induces Pancreatic -Cell Proliferation through Activation of Multiple Signaling Pathways and Prevents InsulinDeficient Diabetes in Mice. Endocrinology 2010; 151(7):3026-3037. Goni L et al. Future Perspectives of Personalized Weight Loss Interventions Based on Nutrigenetic, Epigenetic, and Metagenomic Data. The Journal of Nutrition, 2016, Vol 146, Issue 4,pPages 905S–912S. Hindy G et al. Role of TCF7L2 risk variant and dietary fibre intake on incident type 2 diabetes. Diabetologia 2012 Oct;55(10):2646-2654. Hindy G et al. Several type 2 diabetes-associated variants in genes annotated to WNT signaling interact with dietary fiber in relation to incidence of type 2 diabetes. Genes Nutr. 2016;11:6. Home J et al. Study protocol of a pragmatic randomized controlled trial incorporated into the Group Lifestyle Balance™ program: the nutrigenomics, overweight/obesity and weight management trial (the NOW trial). BMC Public Health 19, 310 (2019) doi:10.1186/s12889-019-6621-8. Popova P. Effect of gene-lifestyle interaction on gestational diabetes risk. Oncotarget. 2017 Dec 19; 8(67): 112024–112035. Qi Q et al. Weight-loss diets modify glucose-dependent insulinotropic polypeptide receptor rs2287019 genotype effects on changes in body weight, fasting glucose, and insulin resistance: the Preventing Overweight Using Novel Dietary Strategies trial. Am J Clin Nutr. 2012 Feb;95(2):506-13. Ramos-Lopez O et al. Guide for Current Nutrigenetic, Nutrigenomic, and Nutriepigenetic Approaches for Precision Nutrition Involving the Prevention and Management of Chronic Diseases Associated with Obesity. J Nutrigenet Nutrigenomics 2017;10:43-62. Ramos-Lopez O. Guide for Current Nutrigenetic, Nutrigenomic, and Nutriepigenetic Approaches for Precision Nutrition Involving the Prevention and Management of Chronic Diseases Associated with Obesity. J Nutrigenet Nutrigenomics 2017; 10(1-2):43-62. Razquin C. The Mediterranean diet protects against waist circumference enlargement in 12Ala carriers for the PPARgamma gene:2 years' follow-up of 774 subjects at high cardiovascular risk." British J Nutrition 2009; 102(5):672-9. Shoji T et al. Chronic administration

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Patia Europe S.L. Paseo Mikeletegi 69. 20009. San Sebastián. Spain.
contacto@patiadiabetes.com Tel. +34 943324673 www.patiadiabetes.com