



AI-based Echo Diagnostics

A Comprehensive Guide to Ultronics' Research

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About Ultromics

Ultromics is a leading health technology company committed to transforming the diagnosis and management of cardiovascular diseases through cutting-edge, AI-driven solutions for echocardiography. Our mission is to revolutionize cardiac care by providing advanced diagnostic support that enhances the accuracy and efficiency of detecting a wide range of heart conditions through our EchoGo® platform.

Our advanced algorithms automatically analyze routinely acquired echocardiograms taken from the patient, detecting hidden patterns and identifying suspected findings, delivering clear, actionable assessments within minutes to support clinical decisions. Our tools provide healthcare professionals with valuable insights, enabling more informed decisions and ensuring patients receive the most appropriate care as efficiently as possible.

We are dedicated to addressing the critical needs of undiagnosed cardiovascular diseases, supporting clinicians in early detection and intervention to ultimately save lives.

Ultromics is backed by a robust portfolio of peer-reviewed publications and clinical studies demonstrating the efficacy of our AI solutions in improving the detection of various cardiac conditions. Our technology has shown significant improvements in the detection and care of conditions such as Heart Failure with Preserved Ejection Fraction (HFpEF), Cardiac Amyloidosis (CA), and Coronary Artery Disease (CAD), with more advancements on the way.

We have collaborated with prestigious institutions such as Mayo Clinic, Northwestern Medicine, Harvard Medical School, UTSW, and the University of Oxford in our clinical studies. Additionally, we are working with global partners like the Foundation for the National Institutes of Health (FNIH), Pfizer, and Johnson & Johnson Innovative Medicine. These partnerships have been instrumental in developing and validating our AI technologies.

In this brochure, you will find an in-depth look at our clinical studies to date.

Clinical Validation

EchoGo® Heart Failure is the first commercially available, software-only medical device designed to facilitate the earlier detection of HFpEF using echocardiography. The technology is setting a new standard in heart failure diagnostics, helping to address the challenge of HFpEF being underdiagnosed in up to 64% of patients.¹

The technology analyzes a single, routinely acquired echocardiographic clip and identifies disease, sending suspected findings to clinicians for decision support. It delivers early, accurate insights, especially when traditional methods are inconclusive or data is limited, enhancing clinical confidence and improving patient care.

EchoGo® Heart Failure

2023

Automated Echocardiographic Detection of Heart Failure With Preserved Ejection Fraction Using Artificial Intelligence.

JACC: Advances. 2023 Aug; 2(6): 100452. <https://doi.org/10.1016/j.jacadv.2023.100452>



2024

Unmasking HFpEF With Artificial Intelligence: A Disruptive Opportunity for Disease Detection.

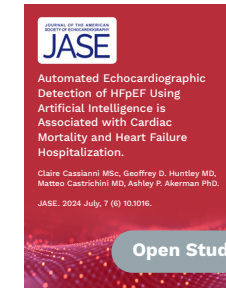
Journal of Cardiac Failure. 2024 Mar; 00(00): 1-2. <https://doi.org/10.1016/j.cardfail.2024.02.010>

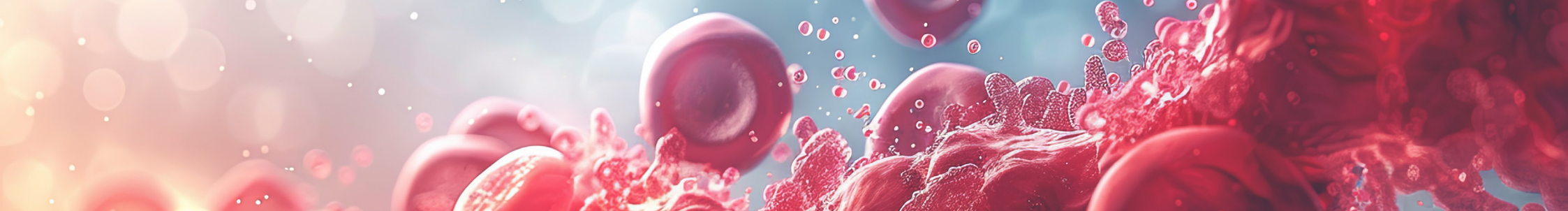


2024

Automated Echocardiographic Detection of HFpEF Using Artificial Intelligence is Associated with Cardiac Mortality and Heart Failure Hospitalization.

Journal of the American Society of Echocardiography. 2024 Jul; 00(00): 1-3. <https://doi.org/10.1016/j.echo.2024.06.016>



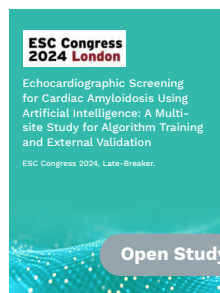


EchoGo® Amyloidosis

2024

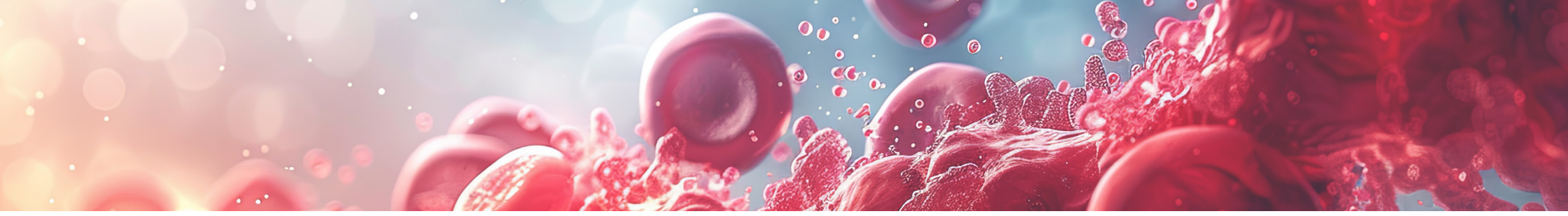
Echocardiographic Screening for Cardiac Amyloidosis Using Artificial Intelligence: A Multi-Site Study for Algorithm Training and External Validation

[ESC Congress 2024, Late Breaking Science.](#)



EchoGo® Amyloidosis uses advanced AI to detect cardiac amyloidosis, a condition often missed due to its subtle presentation. Patients with HFpEF are particularly at risk, with up to two-thirds of cases going undiagnosed.²⁻⁴

EchoGo® Amyloidosis analyzes a single, routinely acquired echocardiographic clip and generates an automated classification of amyloidosis, which is automatically sent to clinicians to inform diagnosis. The technology aims to expedite timely diagnosis and treatment, requiring significantly less clinical information than traditional methods.



EchoGo® Pro

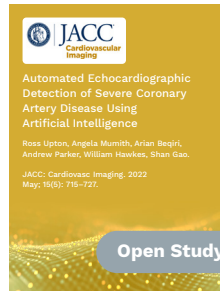
EchoGo® Pro utilizes advanced AI algorithms to automatically analyze stress echocardiograms, focusing on the detection of coronary artery disease.

The technology extracts geometric and kinematic features from heart motion, offering a binary output on the likelihood of severe CAD. Studies, including PROTEUS, show its effectiveness in enhancing clinician confidence and ensuring appropriate patient referrals for further treatment, streamlining the diagnostic process for coronary artery disease.

2022

Automated Echocardiographic Detection of Severe Coronary Artery Disease Using Artificial Intelligence.

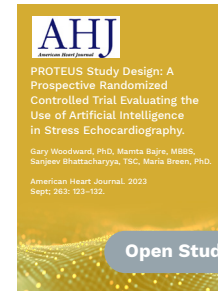
JACC: Cardiovascular Imaging. 2022 May; 15(5): 715–727. <https://doi.org/10.1016/j.jcmg.2021.10.013>



2023

PROTEUS Study Design: A Prospective Randomized Controlled Trial Evaluating the Use of Artificial Intelligence in Stress Echocardiography.

American Heart Journal. 2023 Sept; 263: 123–132. <https://doi.org/10.1016/j.ahj.2023.05.003>

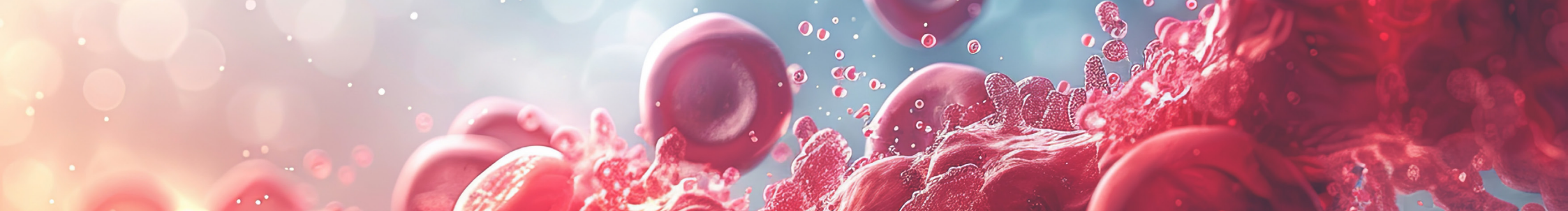


2024

PROTEUS Study Results: A Prospective Randomized Controlled Trial Evaluating The Use Of Artificial Intelligence in Stress Echocardiography

[ESC Congress 2024 Hot Line Session.](#)





EchoGo® Core

EchoGo® Core offers fully automated left ventricular ejection fraction (LVEF) and global longitudinal strain (GLS) measurements, providing clinicians with rapid, accurate, and reproducible analysis of heart function.

Backed by extensive clinical validation, it streamlines routine cardiac assessments, enhancing efficiency and greater confidence in clinical decisions.

2022

Automated Analysis of Limited Echocardiograms: Feasibility and Relationship to Outcomes in COVID-19.

Frontiers in Cardiovascular Medicine. 2022 July; 9: 937068. <https://doi.org/10.3389/fcvm.2022.937068>



Open Study

2022

Left Ventricular Assessment With Artificial Intelligence Increases the Diagnostic Accuracy of Stress Echocardiography.

European Heart Journal Open. 2022 Sept; 2(1): 1-10. <https://doi.org/10.1093/ehjopen/oeac059>



Open Study

2022

Human versus Artificial Intelligence-Based Echocardiographic Analysis as a Predictor of Outcomes: An Analysis from the World Alliance Societies of Echocardiography COVID Study.

Journal of the American Society of Echocardiography. 2022 Dec; 35(12): 1226-1237. <https://doi.org/10.1016/j.echo.2022.07.004>



Open Study

Conference Studies

2024

AI-based Echocardiographic Assessment Is Associated With HF Hospitalization And Cardiac Mortality In HFpEF.

HFSA 2024

Echocardiographic Screening for Cardiac Amyloidosis Using Artificial Intelligence: A Multi-Site Study for Algorithm Training and External Validation.

ESC Congress 2024 (Late-breaker)

PROTEUS Study Results: A Prospective Randomised Controlled Trial Evaluating The Use Of AI in Stress Echocardiography.

ESC Congress 2024 (Hot Line Session)

Performance of an Automated Echocardiographic AI Model. To Detect Subclinical HFpEF in Community-Dwelling Older Adults.

ESC Congress 2024

Diagnostic and Prognostic Evaluation of an Echocardiography-based AI Algorithm for Detecting HFpEF: A Case-Control Analysis.

ESC Congress 2024

Association of a Novel, Non-invasive AI Model to Automate Echocardiographic Detection of Heart Failure with Preserved Ejection Fraction (HFpEF) with Invasive Hemodynamics.

THT 2024

BackMix: Mitigating Shortcut Learning in Echocardiography with Minimal Supervision.

MICCAI 2024

EchoNet-Synthetic: Privacy-preserving Video Generation for Safe Medical Data Sharing.

MICCAI 2024

Multi-Site Class-Incremental Learning with Weighted Experts in Echocardiography.

MICCAI 2024

2023

Automated Echocardiographic Detection of Heart Failure With Preserved Ejection Fraction Using Artificial Intelligence.

ASE 2023

Novel Deep Learning Model for the Detection of Cardiac Amyloidosis: A Pilot Reader Study.

ASE 2023

Comparison of Clinical Algorithms and AI Applied to an Echocardiogram to Categorize Risk of HFpEF.

ACC 2023

Automated Echocardiographic Detection of Heart Failure With Preserved Ejection Fraction Using Artificial Intelligence.

HFSA 2023

2022

Quantification of Left Ventricular Regional Wall Motion: Novel Imaging Features to Predict Coronary Artery Disease.

ASE 2022

Fully Automated Strain Analysis at Rest and Peak Stress During Standard and Contrast Enhanced Stress Echocardiography.

ASE 2022

Can Deep Learning Diagnostic Networks Be Used to Better Understand Morphologic Diagnostic Patterns in Cardiac Amyloidosis?

ASE 2022

Conference Posters

Can Left Ventricular Rotational Function Compensate for Marked Impairment in Longitudinal Strain in Early Cardiac Amyloidosis?

ASE 2022

Automated Analysis of Segmental Longitudinal Strain in Ischemic Heart Disease.

ASE 2022

Coronary Artery Disease Prediction From Resting Echocardiograms Using Novel Imaging Biomarkers.

ASE 2022

2021

AI Enabled Global Longitudinal Strain Quantification in Hospitalized COVID-19 Patients With Myocardial Injury.

ASE 2021

Basal Oriented Disks in Simpson's Rule Improves Precision in Volume Estimations.

ASE 2021

Estimating Heart Rate in Echocardiography Patients Where ECG Monitoring Was Not Performed.

ACC 2021

Fully Automated Left Ventricular Ejection Fraction and Global Longitudinal Strain Predicts Obstructive Coronary Artery Disease in Patients Undergoing Stress Echocardiography: A Multi-Centre Study.

ESC Congress 2021

Fully Automated Quantification of LV Regional Wall Motion From Echocardiograms to Detect Myocardial Infarction.

EuroEcho 2021

Automated Contouring of Non-Contrast Enhanced Echocardiograms Result in Similar Estimates of Left Ventricular Function to Manually Contoured Contrast Enhanced Images in Chemotherapy Patients.

EuroEcho 2021

Ultrasound Video Transformers for Cardiac Ejection Fraction Estimation.

MICCAI 2021

Contrastive Learning for View Classification of Echocardiograms.

MICCAI 2021

2020

Fully Automated Strain Analysis at Rest and Peak Stress During Standard and Contrast Enhanced Stress Echocardiography.

ASE 2020

Coronary Artery Disease Prediction From Resting Echocardiograms Using Novel Imaging Biomarkers.

ASE 2020

Fully Automated Quantification of Contrast and Non-Contrast Echocardiograms Eliminates Inter-Operator Variability.

ASE 2020

Quantification of Left Ventricular Regional Wall Motion: Novel Imaging Features to Predict Coronary Artery Disease.

ASE 2020

