

Cloud-Clone Primary Cardiovascular Cells: From Source QC to Translational Medicine for Precision Research

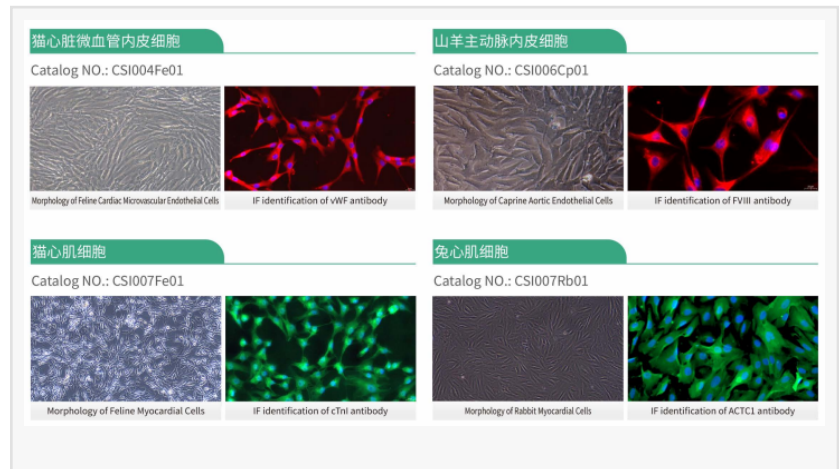
Traceable, high-quality primary cell portfolio addresses long-standing bottlenecks in cardiovascular research

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-- [Cloud-Clone](#) Primary Cardiovascular Cells: From Source-Based Quality Control to Translational Medicine, Powering Precision-Focused Research with Native Cellular Models

Subtitle: Traceable, high-quality primary cell portfolio addresses long-standing bottlenecks in cardiovascular research

[Primary cells](#) serve as physiologically relevant in-vitro models that retain native tissue genetics, receptor profiles and signaling characteristics, and are widely recognised as the gold-standard tool bridging in-vivo and in-vitro cardiovascular research. Nevertheless, global researchers have long been confronted with major pain-points including inconsistent cell quality, limited species options and non-unified identification benchmarks. Cloud-Clone has built a full-chain quality-controlled primary cardiovascular cell portfolio by leveraging its SPF-grade animal facilities and ISO-certified quality management system. The product catalogue covers more than 10 species and over 50 cell subtypes, delivering highly-viable, high-purity and traceable cellular resources for worldwide cardiovascular disease mechanism investigation and new drug development. In the pursuit of cardiovascular disease mechanism exploration and new-drug R&D, the selection of in-vitro cellular models largely defines the baseline of research outcomes. Primary cells fully preserve the genetic background, receptor expression and signal transduction features of source tissues, earning them the reputation as the “gold standard” linking in-vivo and in-vitro studies. Still, inconsistent product quality, narrow species coverage and fragmented identification criteria have continuously troubled the global research community.

Supported by self-operated SPF-grade animal facilities and an ISO-certified quality-control system, Cloud-Clone has launched a comprehensive portfolio of primary cardiovascular cells spanning over 10 species and more than 50 subtypes. By establishing closed-loop full-chain quality control ranging from source animal husbandry to finished-cell release, Cloud-Clone mitigates quality-related limitations and delivers high-viability, high-purity and traceable cell



products for global cardiovascular research.

Full-Chain Quality Control: Establishing a Traceable Identity Profile for Every Cell Batch
Cell viability and homogeneity directly govern experimental reproducibility. Cloud-Clone implements a three-tier quality-control framework covering source material, production workflow and final finished products.

1. Independent source management backed by SPF-grade animal housing Cloud-Clone operates three SPF-grade barrier animal rooms with a total area of 1000 m², equipped with individually ventilated cage (IVC) systems. All workflows including strain introduction, breeding and tissue harvesting are managed in-house to eliminate mycoplasma, pathogenic microbes and cross-contamination risks. All experimental animals are sourced from compliant breeding facilities, ensuring full traceability and health status for every cell batch.

2. Rigorous dual-validation for purity and viability Each batch of primary cells undergoes dual identification via morphological observation and tissue-specific immunofluorescence staining prior to release. For cardiomyocytes, ACTC1 antibody labelling verifies sarcomere striation structures. Vascular endothelial cells are validated for von Willebrand factor expression using FVIII or CD31 markers, while fibroblasts are characterised via Fibronectin immunostaining. Only batches achieving purity above 90% and cell viability exceeding 85% are approved for shipment, laying a solid foundation for stable and reliable experimental systems.

Figure 1. Representative images and identification assays for selected Cloud-Clone primary cardiovascular cells

Comprehensive Product Portfolio: Filling Diverse Gaps in Cardiovascular Research

The cardiovascular system constitutes a sophisticated three-dimensional network built upon cardiomyocytes, blood vessels, heart valves, pericardium and microvasculature. Tailored to diverse anatomical structures and pathological research scenarios, Cloud-Clone has developed a full spectrum of primary cell products covering heart tissue, blood vessels, cardiac valves, pericardium and microcirculation.

- Core cardiac tissue Primary cardiomyocytes (MC) and cardiac fibroblasts (CF) are available across eight species: rat, mouse, rabbit, dog, cat, pig, sheep and chicken. Neonatal rodent cardiomyocytes retain spontaneous rhythmic beating behaviour, representing classic experimental models for cardiomyocyte hypertrophy, hypoxia-reoxygenation injury and cardiotoxicity screening of drug candidates.
- Full-layer vascular wall Aortic endothelial cells (AEC) and aortic smooth muscle cells (ASMC) support mechanistic studies spanning vascular intima to media. Aortic adventitial fibroblasts (AAF, e.g. Cat.No. CSI284Fe01) serve as rare research tools for vascular adventitial inflammation and remodelling investigations. Region-specific cell types including coronary artery endothelial cells (CAEC) and inferior vena cava smooth muscle cells (IVCSMC) are also provided.
- Cardiac supporting structures For research on cardiac fibrosis and valve calcification, Cloud-Clone supplies cardiac valve interstitial cells (CVIC), pericardial fibroblasts (PF), endocardial / epicardial fibroblasts (EnCF / EPCF) as well as pericardial mesothelial cells (PeMC), covering nearly all cellular components of cardiac anatomical compartments.

Application Scenarios: From Basic Science to Translational Medicine

1. Vascular biology and atherosclerosis mechanism research Endothelial injury induced by hyperlipidaemia initiates atherosclerosis. Co-culture systems built with primary aortic endothelial cells and smooth muscle cells enable precise simulation of lipid infiltration, monocyte adhesion and foam-cell formation. Combined with oxidised low-density lipoprotein (ox-LDL) treatment, these models are widely deployed for screening and mechanistic validation of novel anti-inflammatory and anti-oxidative lead compounds.

2. Myocardial injury repair and regenerative medicine Neonatal rat primary cardiomyocytes are the preferred model for hypoxia-reoxygenation (H/R) injury mimicking myocardial ischaemia-reperfusion (I/R). Researchers can quantitatively assess myocardial protection conferred by drug or genetic interventions by measuring cell viability, lactate dehydrogenase (LDH) release and mitochondrial membrane potential, generating critical datasets for heart-failure therapeutic development.

3. Cardiac fibrosis and pathological remodelling Transdifferentiation of cardiac fibroblasts into myofibroblasts driven by TGF- β /Smad signalling represents a core pathological event of cardiac fibrosis. Cloud-Clone cardiac fibroblasts (CF) and valve interstitial cells (VIC), paired with high-throughput screening workflows, accelerate the discovery of anti-fibrotic and anti-calcification therapeutic targets.

4. Large-animal translational medicine and public-health risk assessment Despite widespread adoption, rodent models present notable physiological discrepancies from humans in metabolism and heart-rate regulation. Cloud-Clone has expanded its large-animal primary-cell portfolio covering dog, cat, pig, sheep and guinea pig. These products support pre-clinical validation for medical-device biocompatibility evaluation and stem-cell therapy, as well as veterinary drug development, offering physiologically relevant cellular tools.

Human primary coronary artery endothelial cells are also applied in cutting-edge interdisciplinary research on environmental exposure and population-health risk assessment. Researchers construct in-vivo-ex-vivo biosensor models to evaluate early atherosclerotic effects triggered by environmental hazards such as coal-burning pollutants, expanding new application boundaries for human-derived primary cells in public-health early-warning research.

Research-Enablement: In-Stock Inventory and Customised Culture Systems

Long waiting periods for cell products can delay research progress. Cloud-Clone maintains large-scale ready-to-ship inventory hosting more than 560 primary-cell items spanning neuroscience, immunology, oncology and endocrinology. Cardiovascular cell lines are consistently kept in stock for fast order fulfilment with rapid delivery for major regions.

Besides, custom-formulated serum-free or low-serum specialised media (e.g. cardiomyocyte medium MSI007 series) are matched for each cell type. These media maximally preserve native cell phenotypes and differentiation functions and reduce stress responses induced by medium switching, helping researchers acquire robust and reproducible experimental data.

From gene-level profiling to phenotypic characterisation, from cellular assays to pre-clinical models, Cloud-Clone strives to be a trusted cellular-resource partner for cardiovascular researchers worldwide. The company will keep broadening species coverage and diversifying

primary-cell panels to advance cardiovascular translational research globally.

Researchers may visit the official website www.cloud-clone.com.cn for up-to-date product inventory and technical resources. Upon inquiry and purchase, global users can access dedicated research-oriented support packages together with professional technical consultation services.

Driven by the pursuit of scientific truth, Cloud-Clone continues to unlock the mysteries of the cardiovascular system alongside the global research community.

About Cloud-Clone Corp.

Cloud-Clone Corp. is dedicated to the development and production of high-quality immunoassay reagents and detection solutions. With a focus on antibody engineering, multiplex assay development, and cross-platform compatibility, the company provides research tools designed to support precision medicine and advanced biomedical investigation globally. Our core products and services include the research and development of proteins, antibodies, ELISA kits, primary cells, and multiplex cytokine assay kits, as well as professional CRO services to fully meet the diverse needs of biomedical research and related fields.

For more information about Cloud-Clone Corp, visit www.cloud-clone.com.

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