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The human heart, based on a drawing by Paolo Mascagni (1755–1815). (Courtesy of M. Kulyk/SPL)

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# CARDIOVASCULAR DISEASE

**C**ardiovascular disease is the leading cause of death globally. According to the World Health Organization, it was responsible for 30% of all deaths in 2005. Although typically considered a disease of developed countries, its incidence is increasing in the developing world.

Cardiovascular disease usually stems from vascular dysfunction — for example, as a result of atherosclerosis, thrombosis or high blood pressure — which then compromises organ function. Most notably, the heart and brain can be affected, as occurs in myocardial infarction and stroke, respectively. For heart disease in particular, a wide range of underlying pathologies can lead to defective functioning of the heart muscle.

In the past few decades, major improvements have been made in treating some types of cardiovascular disease. In the case of coronary heart disease, for example, therapies such as the administration of statins and the insertion of stents have reduced death rates. However, new treatment options are urgently needed for all types of cardiovascular disease. Moreover, improving diagnosis is crucial, because by detecting the early stages of disease, the focus of therapy could be shifted from treatment to prevention.

This Insight brings together review articles about atherosclerosis, thrombosis, heart failure, cardiac arrhythmia and congenital heart disease. These articles explore recent progress in understanding the mechanisms that lead to disease and discuss the implications of these advances for identifying new therapeutic targets and developing new therapeutic strategies, including the potential use of stem cells for treating heart disease. Two progress articles also provide an update on how new technologies for identifying disease biomarkers and for imaging might enable disease to be detected at early stages.

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**Michael Basson, Senior Editor, *Nature Medicine***

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