# TACKLING MAJOR KILLERS: HEART DISEASE

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How are your New Year's resolutions holding up? Make sure that cutting back on your drinking, quitting smoking and getting more exercise top the list. Such lifestyle changes go a long way towards warding off heart disease, one of the leading causes of death among adults around the world. In the meantime, medical researchers continue to gain more insight into what directly causes heart disease—discoveries that are helping them develop more effective treatments.

In this special online issue, Peter Libby explains the latest ideas about how blood vessels deteriorate in the case of atherosclerosis, and Rakesh K. Jain and Peter F. Carmeliet describe how, by manipulating angiogenesis, or the formation of new blood vessels, researchers may find drugs to treat the condition. Alternatively, other authors explore the history of defibrillation; operations to treat cardiac arrhythmias; new procedures for coronary bypass surgery; and, when all other interventions have failed, the use of artificial hearts.—*the Editors* 

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#### The Trials of an Artificial Heart

BY STEVE DITLEA; SCIENTIFIC AMERICAN, JULY 2002 A year after doctors began implanting the AbioCor in dying patients, the prospects of the device are uncertain



### **Operating on a Beating Heart**

BY CORNELIUS BORST; SCIENTIFIC AMERICAN, OCTOBER 2000 Coronary bypass surgery can be a lifesaving operation. Two new surgical techniques should make the procedure safer and less expensive



### Surgical Treatment of Cardiac Arrhythmias

BY ALDEN H. HARKEN; SCIENTIFIC AMERICAN, JULY 1993 To save the life of a doomed patient, the author and his colleagues developed a now standard surgical procedure for correcting lethally fast heartbeats in many people susceptible to them



#### Defibrillation: The Spark of Life

BY MICKEY S. EISENBERG; SCIENTIFIC AMERICAN, JUNE 1998 In the 50 years since doctors first used electricity to restart the human heart, we have learned much about defibrillators PLUS: If You Don't Have a Defibrillator by Carl E. Bartecchi



#### Atherosclerosis: The New View

BY PETER LIBBY; SCIENTIFIC AMERICAN, MAY 2002 It causes chest pain, heart attack and stroke, leading to more deaths every year than cancer. The long-held conception of how the disease develops turns out to be wrong



#### Vessels of Death or Life

BY RAKESH K. JAIN AND PETER F. CARMELIET; SCIENTIFIC AMERICAN, DECEMBER 2001 Angiogenesis—the formation of new blood vessels—might one day be manipulated to treat disorders from cancer to heart disease. First-generation drugs are now in the final phase of human testing