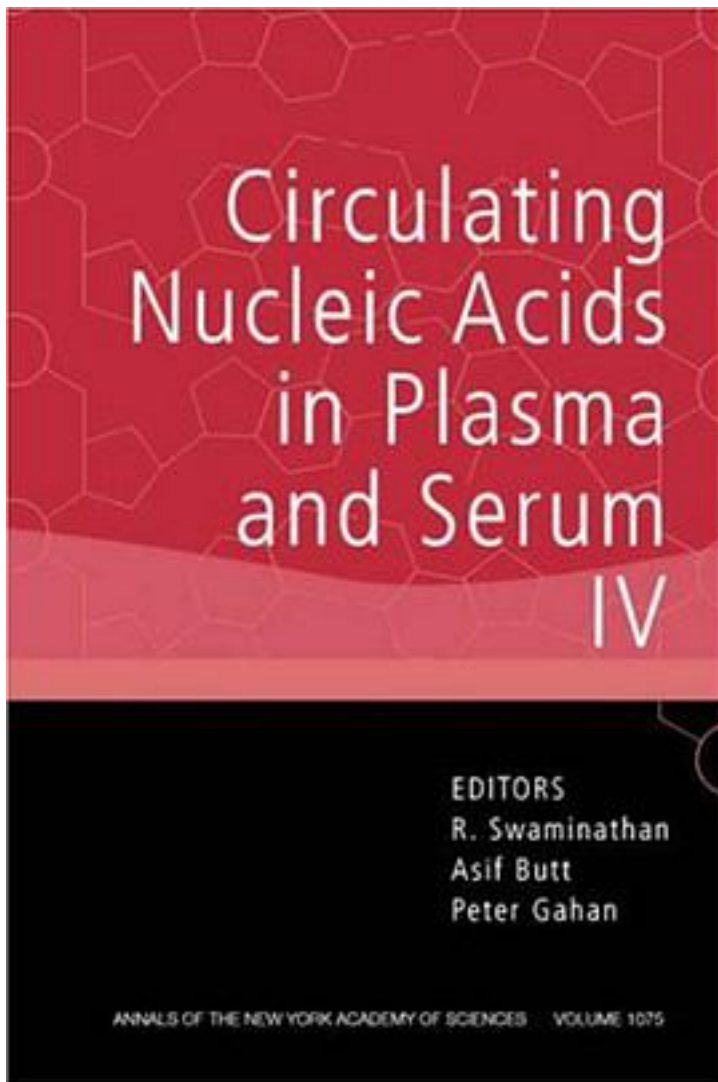


# Circulating Nucleic Acids in Plasma and Serum



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An accurate, inexpensive, and noninvasive method for the early diagnosis of cancer has been something of a holy grail among cancer researchers, but until recently a method meeting all three criteria has been elusive. Nucleic acids were first discovered in circulation in 1948, but it was not until the 1960s and 70s that patients with autoimmune disease and cancer were discovered to have higher levels of circulating DNA than were detected in healthy persons. The focus in this volume is on three major applications of the circulating nucleic acids detection method: cancer, fetal medicine, and diseases such as diabetes, stroke, and myocardial infarction. In addition, there are reports on the biology and origins of circulating DNA and RNA and on improved methods for the detection of nucleic acids in plasma and serum. The circulating DNA found in cancer patients has many characteristics in common with their tumors, which made it an attractive candidate for use in the diagnosis and management of patients with malignancies. This method can also be applied to the assessment of the subclinical tumor burden in cancer patients, thus reducing the risk of unnecessary chemotherapy. Detection of nucleic acids circulating in maternal serum means that fetal diagnosis may be possible without resorting to the more dangerous and invasive methods now used (e.g., amniotic fluid and chorionic villus sampling). Detection of problems in the pregnancy such as preeclampsia and intrauterine growth retardation may also become possible through maternal blood samples. In diabetic patients, circulating nucleic acids can be used for the early detection of developments such as retinopathy. The benefits of using circulating nucleic acids in the diagnosis and management of cancer and chronic disease will be realized through earlier detection by means of this less expensive and less invasive testing technique and through its potential for closer monitoring of the disease. NOTE: Annals volumes are available for sale as individual books or as a journal. For information on institutional journal subscriptions, please visit [www.blackwellpublishing.com/nyas](http://www.blackwellpublishing.com/nyas). ACADEMY MEMBERS: Please contact the New York Academy of Sciences directly to place your order ([www.nyas.org](http://www.nyas.org)). Members of the New York Academy of Science receive full-text access to the Annals online and discounts on print volumes. Please visit <http://www.nyas.org/MemberCenter/Join.aspx> for more information about becoming a member

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