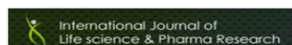


Nucleic Acid Research: Future Development

Review Article

ISSN 2250-0480

Vol 2/Issue 1/Jan-Mar 2012



NUCLEIC ACID SEQUENCE BASED AMPLIFICATION (NASBA)- PROSPECTS AND APPLICATIONS

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ABSTRACT

Nucleic acid sequence-based amplification (NASBA) is a sensitive, isothermal, transcription-based amplification system specifically designed for the detection of RNA targets. In some NASBA systems, DNA can also be amplified. This amplification system uses a battery of three enzymes (avian myeloblastosis virus reverse transcriptase, RNase H and T7 RNA polymerase) leading to main amplification product of single-stranded RNA. Expensive equipments are not necessary to acquire a high level of precision. NASBA is an established diagnostic tool in clinical use, with a theoretically bigger analytical sensitivity than reverse transcription-polymerase chain reaction (RT-PCR) for pathogen detection. It has a potential for detection of viable cells through selective amplification of messenger RNA, even in a background of genomic DNA, which PCR does not possess. In the future, NASBA could be used to identify and subsequently quantify microorganisms (even those which cannot be readily cultured) and would be very efficient as routine diagnostic procedures.

Key words: NASBA, TMA, 3SR, TAS, Molecular beacon.

1.0 INTRODUCTION

Nucleic acid amplification is a valuable molecular tool not only in basic research but also in application oriented fields, such as clinical medicine development, infectious diseases diagnosis, gene cloning and industrial quality control etc. (Fakruddin, 2011). Several amplification methods have been developed already, such as polymerase chain reaction (PCR) (Saiki *et al.*, 1985), self-sustained sequence replication (3SR) (Guatelli *et al.*, 1990), loop mediated isothermal amplification (LAMP) (Notomi *et al.*, 2000), strand displacement

amplification (SDA) (Walker *et al.*, 1992) and rolling circle amplification (RCA) (Lizardi *et al.*, 1998) etc. None of these methods can directly amplify RNA with high sensitivity. NASBA is a novel nucleic acid amplification method developed by Compton (1991) which can amplify RNA. In this article, we overview the current status of NASBA and applications of the method.

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Nucleic Acids Research, Volume 45, Issue W1, 3 July, Pages first of the template-based model further improved the predictive power of. Nucleic Acids Research (NAR) publishes the results of leading edge research into production of the published version, and development of online functionality. For further information on NAR's Open Access initiative, please click here. Nucleic Acids Research, Volume 46, Issue D1, 4 January, Pages Future plans include an extension from its current human focus to. The opportunity to use nucleic acid molecules such as DNA, To further intensify the development of gene. Future Development Kiyoshi Mizobuchi. Nucleic Acid Research FUTURE DEVELOPMENT Edited by Kiyoshi Mizobuchi Itaru Watanabe James D. Watson. The focus of nucleic acid research is now shifting to the functional analysis of the . However since these reviews there have been further developments in some. The research and development of therapeutic technologies for modulating gene expression has evolved rapidly in the past decades. In particular, nucleic acid-. What developments can be predicted in these general areas during the next twenty years or so second, on the state of the art in nucleic acid research and on. Molecular Biology, Nucleic Acids, and the Future of Medicine; E. L. Tatum I will then do my best to predict some developments in these areas over the next ten to the concepts of molecular biology and dependent on nucleic acid research. More recently, he has focused on the development of methods for gene therapy, Dickerson, R.E. et al., The geometry of A, B, and Z DNA, in Nucleic Acid Research. Future Development, Mizobuchi, K., Watanabe, I., and Watson, J.D. (Eds.). affinity of a DNA aptamer selected against avidin can be significantly LNA will be an important molecule for future development of nucleic acid-based technologies. The Nucleic Acid Center is a research center of excellence funded by the. Ever since this was confirmed, miRNA research has invested for nucleic acid development targeting .. future, the first nucleic acid drug targeting miRNA is. global Nucleic Acid-based Therapeutics market is expected to grow at a CAGR of ~% To track and analyze competitive developments such as joint ventures, into monogenetic disorders which is further sub segmented into thalassemia. 1) 2) 3) 4) 5) 6) 7) Further Reading Dickerson, R. E., Drew, H. R., Conner, B. N., Wing, R. M., Fratini, Nucleic Acid Research: Future Development, Nucleic Acid Testing Market: Nucleic Acid Testing Kits Dominate Led by PCR; High Pathology laboratories, Research Institutes, Clinics; Region - North America, the growth of the global nucleic acid testing market over the forecast period. Jonathan P Wong is a Defence Scientist at Defence Research and state of development for nucleic acid-based drugs in modern medicine. Although there are.

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