

Sequence analysis

ABIF Manager: simple reading and editing of ABIF formatted files

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Associate Editor: Alfonso Valencia

Received on May 12, 2015; revised on August 3, 2015; accepted on August 25, 2015

Abstract

Summary: ABIF Manager is simple application for low-level access to ABIF formatted files. Those are produced by Data Collection software based on the data, collected from capillary sequencing machine. The application shows all the data as readable text, which can be easily edited.

Availability and implementation: The program source code and compiled executable is freely available at: <https://sourceforge.net/projects/abifmanager/>

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1 Introduction

Although there has been a massive development of next generation sequencing recently, Sanger sequencing method still remains widely used for routine sequencing of DNA fragments (Chen *et al.*, 2014; Dawit *et al.*, 2014; Ihle *et al.*, 2014; Rounds *et al.*, 2014). Results produced by capillary sequencing machines are often analyzed by Data Collection software, which generates ABIF (Applied Biosystems Genetic Analysis) formatted files (.ab1, .fsa). All data generated by the software (sequencing machines) are stored in structured directories which forms the resulting file (AB manual). Typical directory of ABIF formatted file consists of: Tag name, Tag number, Element type code, Size in bytes of one element, Number of elements in item, Size in bytes of item and Item's data or offset in file and Datahandle.

There are several applications which can show and sometimes modify the data (e.g. Sequence Scanner, Applied Biosystems; Chromas, Technelysium Pty Ltd). Most of the applications, however, process the data and show it in user friendly form. Although this approach suits the needs of most users, the data loses some information by the processing. Furthermore, usually not all data contained in the data file are processed by such software.

The ABIF Manager is a simple, yet powerful application, which reads and writes the directories of ABIF formatted file by accessing the directories directly.

2 Program overview

ABIF Manager is simple stand-alone application for reading and editing ABIF formatted files (.ab1, .fsa) and doesn't require installation. It's programmed in Visual Basic .NET 2012 (Microsoft, USA) and requires .NET Framework version 3.5 for running on Microsoft Windows.

The application reads ABIF formatted files and lists all the directories contained in the file. The directories contained in the opened file are listed in ABIF Manager main window as individual items of ListView control. Data of the items can be accessed by double-click. Application also includes descriptions of all directories according to ABIF reference, so that the user did not have any difficulties in identifying individual directories. Data and type of all directories can be changed by the user. It's also possible to remove existing and add new directories.

3 Purpose

Purpose of the ABIF Manager is to give users a simple tool, which will allow them to freely manipulate ABIF formatted files without any limitation. Any aspect of the edited file can be changed due to first-hand directory manipulation approach. Apparent drawback of the program is the difficulty of complex data manipulation. The aim

of ABIF Manager, however, is tuning of minor deficiencies the file can possibly contain, and which cannot be changed by any other software.

4 Interface

The interface of ABIF Manager is very simple and intuitive and all users with basic computer/Microsoft Windows skills should use the program without any difficulty. All the control elements are clearly visible in the main window and double-clicking on listed directories opens a second window with its data.

Funding

The work was supported by the Czech Ministry of Education, Youth and Sports [CZ.1.07/2.3.00/30.0049]; the Grant Agency of the Czech Republic

[P506/12/1320] and the Ministry of Agriculture of the Czech Republic [QJ1510172].

Conflict of Interest: none declared.

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