# GenomeCruiser: A Laboratory Notebook for Human Gene Mapping

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**Abstract**

*A system is described for cruising the sea of information in the world of human genome. The system named GenomeCruiser combines at any start-up personal data with the data from GDB. Therefore, it is a convenient laboratory notebook for the user to simultaneously access his/her experimental data and the most up-to-date public data. GenomeCruiser is also equipped with a friendly and powerful interactive user interface.*

## 1 Introduction

Genome projects have accelerated the production of hierarchical biological and molecular data of human genes in laboratories distributed over the world. At the same time, a lot of efforts have been devoted to develop such public databases as GDB, OMIM and sequence banks. Therefore, it is absolutely required for researchers to utilize a computerized database which is able to capture, browse and analyze the vast amount of both personal data and the public data.

We have developed a system which copes with the requirement. The system named GenomeCruiser is based on GeneView[1] developed by one of the authors. It is the key and novel features that GenomeCruiser combines and simultaneously process personal data at a

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local site with the public data from GDB, which is the international information repository of authentic data on human genome.

GenomeCruiser imports a part of GDB in the format of flat files from one of GDB nodes when it runs on a computer connected to INTERNET. The flat files with an extension name ".bcp" are prepared every week there by use of SYBASE Bulk Copy Program. GenomeCruiser converts these files into its own format to be used as the public data. Personal data at a local site and the public data are maintained in two independent flat files until they are merged into an integrated database at the start-up of GenomeCruiser. Therefore, it is possible for a user to cruise the sea of the most up-to-date personal and public data, if an appropriate shell script is set up. The two types of data are distinguished on a display by two different colors.

# 2 System

GenomeCruiser is equipped with an powerful interactive user interface to make it easy for genome scientists to operate by themselves. A chromosome ideogram is displayed on the screen. The resolution could be chosen from 550 bands and 850 bands. The zooming of the ideogram is also available. It should be emphasized that the ideogram is not just a static image but an aggregate of active buttons in line. It is an interactive graphical user interface.

Each band in the ideogram was designed as the button. The user is able to select a specific region for his/her study by picking the button. The region selected is identified by a bar which appears at the left side of the ideogram, and is used as a key for "search–by–region". Region tags provide the similar function. The selected region is shown as an inverted box, and is a key for "coarse search–by–region".

An appropriate ideogram will be displayed when a user clicks a line in the main window where gene symbols and locations are listed. A bar and gene symbols will appear along the right side of the ideogram. These are distinguished on a display by different colors. If a gene is distributed into separate sites, these will be displayed in the same vertical line. It supports "japanese" locale, by the way.

# 3 Conclusions

GenomeCruiser is a compact and powerful computer notebook for genome researches. It runs on SPARCstation(SunOS 4.1.3) with X11R6 (patchlevel 4 or later) and will be in the free software.

# References

[1] H.Dohi and M.Ishizuka and S.Minoshima and N.Shimizu, "GeneView: Multi–language Human Gene Mapping Library with Graphical User Interface," *Journal of Computer Applications in the Biosciences(CABIOS)*, Vol. 9, pp. 459–464, 1993.