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# Computational Biology: A Practical Introduction to BioData Processing and Analysis with Linux, MySQL, and R

*By RÖbbe Wünschiers*



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In its revised and extended second edition, this book covers the basics of bioinformatics/information technology: programming with Bash, Sed and AWK, and the respective terminology. Case studies, exercises with solutions and worked-out examples are included.



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## **Editorial Review**

### Review

From the reviews of the second edition:

“This book aims to guide an astute pupil on the path to acquiring a practical familiarity with the UNIX command line. ... I found the book entertainingly written and well edited--increasingly rare attributes in current books on computing. ... The book is a spirited introduction to data processing on Unix, and will also be useful to driven data wranglers who are not necessarily in the biology field.” (A. Squassabia, Computing Reviews, November, 2013)

“This work will be valuable to new computational biology/bioinformatics students who want to learn programming. ... Students can follow each chapter by working out the code on their own computers, and they can sharpen their programming skills by trying out the exercise at the end. ... The book will be a good starting point for many newcomers who have no or little idea of programming as well as a concise reference guide for students and scientists. Summing Up: Highly recommended. All academic and professional audiences.” (V. Mathura, Choice, Vol. 51 (3), November, 2013)

### From the Back Cover

This greatly expanded 2nd edition provides a practical introduction to

- data processing with Linux tools and the programming languages AWK and Perl
- data management with the relational database system MySQL, and
- data analysis and visualization with the statistical computing environment R

for students and practitioners in the life sciences. Although written for beginners, experienced researchers in areas involving bioinformatics and computational biology may benefit from numerous tips and tricks that help to process, filter and format large datasets. Learning by doing is the basic concept of this book. Worked examples illustrate how to employ data processing and analysis techniques, e.g. for

- finding proteins potentially causing pathogenicity in bacteria,
- supporting the significance of BLAST with homology modeling, or
- detecting candidate proteins that may be redox-regulated, on the basis of their structure.

All the software tools and datasets used are freely available. One section is devoted to explaining setup and maintenance of Linux as an operating system independent virtual machine. The author's experiences and knowledge gained from working and teaching in both academia and industry constitute the foundation for this practical approach.

### About the Author

Röbbbe Wünschiers is Professor for Biochemistry/Molecular Biology at University of Applied Sciences

Mittweida/Germany, where is teaching courses on biotechnology and bioinformatics. In 2004 he published the textbook “Computational Biology - Unix/Linux, Data Processing and Programming” with Springer. The new edition of this book will benefit from several years of teaching experience at different Universities, and his experience gathered while leading a bioinformatics team at BASF Plant Science, Germany.

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### **From reader reviews:**

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#### **Mary Hanlon:**

Precisely why? Because this Computational Biology: A Practical Introduction to BioData Processing and Analysis with Linux, MySQL, and R is an unordinary book that the inside of the book waiting for you to snap the idea but latter it will zap you with the secret this inside. Reading this book alongside it was fantastic author who all write the book in such amazing way makes the content on the inside easier to understand, entertaining approach but still convey the meaning totally. So , it is good for you for not hesitating having this any longer or you going to regret it. This excellent book will give you a lot of gains than the other book have such as help improving your proficiency and your critical thinking means. So , still want to delay having that book? If I had been you I will go to the guide store hurriedly.

#### **Kent Brown:**

The book untitled Computational Biology: A Practical Introduction to BioData Processing and Analysis with Linux, MySQL, and R contain a lot of information on this. The writer explains the woman idea with easy approach. The language is very simple to implement all the people, so do definitely not worry, you can easy

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