Editorial – 7th International Students Summer School on Human Growth – Data Analysis and Statistics

Detlef Groth[1] • Michael Hermanussen[2] • Christiane Scheffler[3]

[1]University of Potsdam, Institute of Biochemistry and Biology, Bioinformatics,Germany
[2]Aschauhof 3, 24340 Eckernförde, Altenhof, Germany
[3]University of Potsdam, Institute of Biochemistry and Biology, Human Biology, Germany

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Correspondence to:

Detlef Groth
email: detlef.groth@uni-potsdam.de

Statistics is the key skill required by researchers to answer scientific questions based on often complex data sets. 9 students and young researchers from Indonesia, South Africa, Spain, Slovakia, and Germany were educated and trained on their own data sets with the aim to publish these results at the 7th International Students Summer School on Human Growth - Data Analysis and Statistics at the Ecological Station Gülpe of the University of Potsdam from July 3rd to 11th 2024.

Statistical analysis after data collection typically begins with data preparation. The fact that this process can be quite tedious is a common experience for our summer school students.

After introduction to the magic of the statistical programming language R (R Core Team 2025) by Detlef Groth, the participants had to start cleaning up their data. Providing clean and recognizable short column names is a first prerequisite for producing meaningful output in the end. The classic hint that a legend for the abbreviations can be stored in separate sheets of these spreadsheet files was, as usual, well received. After one or two days of data cleaning, the statistical analysis can usually shine through, since it is then already imparted in the annual lecture series by Detlef Groth on "Statistics with R" that are usually given in the mornings. In the last issue, as well as in this one, Groth started a review series that will highlight topics from these morning statistics sessions in case you are interested in it (Groth 2024).

Take-home message for students Statistics is the key skill for research. Clean data and short column names are the key to success.

Although students' results are usually quite advanced after these few days of intense learning, analyzing, and communicating with each other, the next hurdle is mastering the process of writing a paper. This can again take a surprisingly long time, as shown by the recent publications in the last issue by Delor (2024) on the relationship between skeletal robustness and motor skills in preschool children and also by Baran (2024) on the anthropometric changes in migrating populations. These students already participated in the Summer School 2023 and published their paper in the last volume 2/2024.

This issue includes papers by students who participated in the Summer Schools 2024. The more computationally targeted topics are usually challenging ones that can be tackled by students in our master's program in bioinformatics at the University of Potsdam and supervised by Detlef Groth. Last year's contribution in this category was made by Sarah Leutner, who studied the impact of a tax strategy on artificial social networks characterized by competition and resource exchange, providing interesting insights into the evolution of inequalities even in the presence of equal opportunities in these competitions (Leutner et al. 2025). But also, students from the Bachelor courses of life science or education, and the Master course of Ecology, Evolution, and Conservation supervised by Christiane Scheffler regulary participate at our summer schools. The publications by Chantal Delor (Delor et al. 2024) and Jana Fritsch (Fritsch and Scheffler 2025) are the last examples for it.

We also have a contribution in this issue from our students from South Africa. Lethabo Ramoshaba (2025) analyzed a possible association between HSPG2 genetic variants and anterior cruciate ligament (ACL) ruptures, but found no such association. In contrast, mass and BMI seem to be much more important risk factors in this context.

Our students from Indonesia contributed by dealing with factors influencing human growth; Yuni Hisbiyah (2025) focused on environmental factors and geographic isolation and their consequences.

Similarly, Simona Sulis (2025) analyzed the effect of energy drink consumption on bone tissue quality; the results were surprising, probably due to the fact that energy drinks are often consumed by people with high physical activity, which could reverse the expected negative effect of these drinks on bone tissue quality.

Finally, with Jana Fritsch (2025) we come back to the association between migration, socio-economic factors, and human growth. Jana Fritsch again used data from migrant children of Turkish origin, as did Baran et al. (2024) in 2023, which showed that from the first to the second generation there was an increase in height, with growth partially catching up with that of their German-origin peers.

The summer school publications will be accompanied by some tutorials to summarize the trained statistical methods for former and future summer school participants (Groth 2024).

The issue with this editorial will most likely be published just before our Summer School 2025, and the articles reviewed here could hopefully inspire and encourage students in their scientific careers.

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