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V.S. Vasylieva

NGO Genomics UA

3, Dorogozhitska Str., Kyiv, Ukraine, 04119

vvasylieva@genomics.org.ua

BIOINFORMATICS IN UKRAINIAN: FACILITATING THE INTEGRATION OF PROGRAMMATIC DATA ANALYSIS INTO BIOMEDICAL SCIENCE AND EDUCATION

Background/Aim. The scale of biomedical data acquisition necessitates the integration of programmatic curation and processing. Unification of omics language brings clarity to the knowledge transfer and ease the spread of modern experimental and computational methods. However, the language barrier is a known challenge in disseminating bioinformatics skills¹. We aim to define a minimal set of omics terms for translation from English into Ukrainian, providing a low-barrier entry into bioinformatics and facilitating writing and communication for students, educators, scientists, and journalists. **Methods.** Since 2023, Genomics UA has held four online courses on bulk, single-cell, and spatial transcriptomics, multiomics, and proteomics. Terms included in introductory materials were selected as representative of the most essential concepts in each field and released on GitHub². Terms were translated using four AI models (DeepL, Google Translate, ChatGPT, and Claude) to identify those lacking consistent translation. As a proxy for real-world usage, we assessed how well the consistently translated terms are represented in the Ukrainian Wikipedia. **Results.** 93 field-specific terms and 33 cross-field terms were identified. At least two models disagreed on 37.3% of all terms, with 10 terms reaching no consensus across any model (e.g. “data-dependent acquisition”, “single-read sequencing” etc.). Among terms on which most models converged (3 or 4 out of 4), 70 had established Ukrainian equivalents, while others (10) were translated literally by at least one model. This may indicate either the most direct translation path or a lack of established professional linguistic conventions. There are twice as many pages focused on either of 53 well-translated terms in English Wikipedia compared to Ukrainian one, indicating insufficient accessibility in Ukrainian educational resources. **Conclusions.** The current state of the omics terms integration into Ukrainian scientific vocabulary is unsystematic. Progress in translating terminology for one omics field can be transferred to others because they share many analytical approaches. We propose a community-driven translation effort to jointly define and implement a core set of omics concepts in daily use. The “Awesome Ukrainian Omics Words” project is open to contributions².

Keywords: education, bioinformatics, omics, transcriptomics, proteomics.

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