

# Foreword

*Integrated Pathology. A Compendium in Polish and English for Higher Education and Self-Directed Learning Supported by Competency-Based Modules: From Conventional Autopsy to Laser Microdissection, Precision Medicine and Interdisciplinary Studies* is a modern scholarly work for academic training that is innovative in terms of its form and methodology which draws on the principles of neuroscience, and establishes a fully competency-based approach to teaching.

The widespread awareness of the changes awaiting us in the future is also becoming a challenge for the educational process. Managing change effectively is possible only through acquiring competencies. This compendium contributes to the development of competencies in the area of pathology, which students consider to be one of the most difficult subjects that they have to study. The book, which meets current standards, will help students to prepare for the demanding pathology examination, while at the same inspiring them in their continued development – considered a meta-competency of the future.

The book presents a spectrum of medical issues with the greatest competency value, including the latest achievements and the most pressing challenges of contemporary medicine. It also highlights modern aspects of applying the knowledge, skills and competencies that it presents in pathological and clinical practice, while tracing the path of pathology from conventional autopsy to microdissection, precision medicine and interdisciplinary studies. The substance of the book, its condensed and structured format, as well as the carefully selected contents created in accordance with the needs expressed by Polish and English-speaking students, are intended to reduce cognitive overload, which is a known problem for contemporary education, particularly at the early stages of developing skills and competencies. It is with this in mind that the idea for this monograph originated.

Competency-based modules apply the most modern innovative teaching methodologies to the academic teaching of pathology, the identification of

high-yield core competency domains – the most important knowledge in acquiring competencies – as well as an in-depth analysis of the evolution of pathological diagnostics, highlighting the role of the pathologist in contemporary clinical practice. The innovative concept of these modules is based on the author's experience, including interdisciplinary research and cooperation within a multidisciplinary therapeutic team in an international environment. The modules provide support at the beginning of the training process, serve to consolidate skills that have been acquired and allow the student to gain competencies that enable both effective further study of the subject and a rapid transition to the domain of clinical sciences. The modules and all the universal resources of this new type of textbook, including the high-yield core competency domains, are presented in a bilingual format.

Since the current generation is the most adept at parallel processing, this book also includes components of working with the visual image, with online resources and with AI, all of which are highly valued by students. In this age of rapidly evolving digitalization they have already become an intrinsic aspect of our lives, and, thanks to our developing competencies in the area of critical analysis, they are valuable educational tools of our time that students have come to expect.

The compendium allows free rein in the choice of how and to what extent the material is used, which will depend on the student's individual needs and preferences in training and self-study. The suggested solutions are modern, promote an interdisciplinary view of contemporary medicine and encourage a passion for learning, not only in the field of pathology. The broad application of the principles of neuroscience supports the development of competencies and guarantees effective teaching and learning. The inclusion of self-development resources emphasizes the learner's agency and supports meta-competencies. The content may be used either in a self-directed manner or within the mentoring process – recognized as a catalyst for self-development.

The use of two languages within a single academic publication is a deliberate choice. Integrated Pathology – constitutes another element of the author's scientific and educational strategy aimed at promoting science and supporting the holistic development of participants in the learning process, from the earliest stages of education up to and including the academic level. It also serves integration, not only in the substantive sense of an integrated approach to knowledge and its transmission, but also across various divides – in this case, between communities and across cultures.

#### **PART I. MATERIALS FOR THE PATHOLOGY COURSE**

The materials for this pathology course include content intended for both Polish-speaking and English-speaking students, in accordance with the needs they have expressed. They include materials for the author's lectures in Polish, containing selected, structured, and up-to-date information that Polish students most often seek in English-language literature and additional sources, as well as universal resources

designed to support examination preparation for both Polish-speaking and English-speaking students, including:

- high-yield core competency domains that identify the knowledge of greatest importance for acquiring competencies in the field of pathology;
- a list of flipped-learning topics important for preparation for classes, assessments, and the examination;
- a selection of slides for practical classes with competency-based relevance.

This section presents issues in a holistic manner and includes above-standard information, cross-sectional analyses and summaries. It also demonstrates the value of learning and provides examples of how the acquired knowledge, skills, and competencies can be applied in pathology and clinical practice.

## **PART II. COMPETENCY-BASED MODULES AT THE INITIAL STAGE OF THE DEVELOPMENT OF SKILLS AND COMPETENCIES**

The competency modules are universal in character. Based on neuroscience research and the author's many years of teaching and mentoring experience, they offer Polish-speaking and English-speaking students alike the most effective ways of building competencies – from basic morphological analysis, through the field of histoclinics, to critical analysis using virtual reality technology.

The competency modules of the compendium implement the most advanced innovative teaching methodologies in academic pathology education, such as flipped learning, progressive learning, reciprocal learning, inquiry-based learning, peer feedback learning, blended learning, microcycle learning, the jigsaw method, and learning supported by virtual reality techniques and AI resources. Furthermore, they include so-called 1-minute and 15-minute documents, which enable concise and essential presentations of the most important aspects of the topics discussed, as expected by contemporary students.

This section is intended to systematize knowledge and to introduce and develop competencies through practical tasks that draw attention to the most pressing current medical issues and the challenges of the future (including cancer, epidemic diseases, the health effects of environmental pollution, and the consumption of ultra-processed food). It also provides feedback, conclusions, and final take-home messages. In addition, the modules are designed to help English-speaking students adapt effectively to the distinct features of pathology within the prevailing educational model (or the separate disciplines of pathomorphology and pathophysiology in those countries where this distinction is maintained).\*

\* Throughout the English-language part of this book, the term pathology (specifically anatomical pathology) is used in accordance with standard English-language medical nomenclature. This differs from usage in some countries, such as Poland, where the disciplines of pathomorphology (anatomical pathology) and pathophysiology are traditionally distinguished as separate subjects.

## **PART III. SELF-DEVELOPMENT RESOURCES**

The self-development resources are likewise universal in character, but operate at the level of developing meta-competencies. Drawing on the most effective strategies derived from neuroscience, this section is intended to support self-development and the growth of operational empathy. It contains tasks corresponding to the topics covered

in the earlier parts of the compendium, together with answers, tags, and explanations, serving as suggested starting points for further autonomous learning.

The resources include:

- pathological processes in the past and today: a multiple-choice and multiple-response tests, together with self-development tasks (competency-based spaced repetition);
- pathological processes as a continuum: competency-based tasks using morphological images (reflective self-assessment);
- pathological processes in clinical practice: a competency-based competency worksheet for clinical situations (an introduction to metacognitive thinking).

This part of the compendium also includes a list of recognized sources recommended for study and for monitoring learning progress.