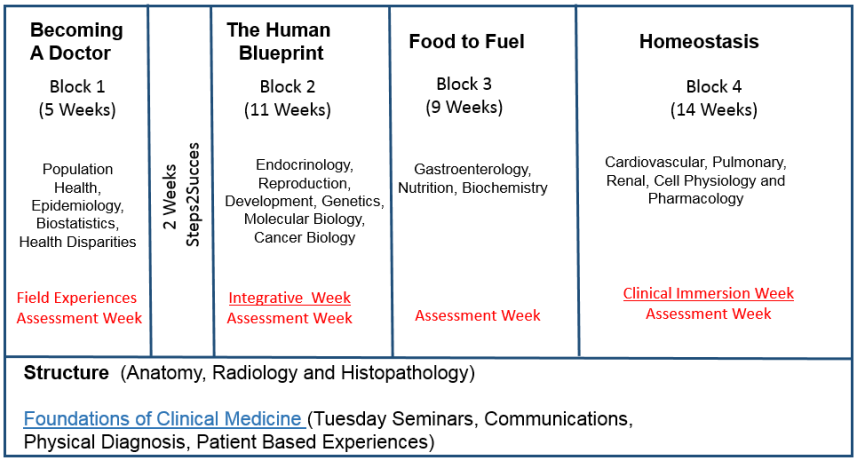
Case Western Reserve University – University Program Medical School



BLOCK 2: Action Report 2023

1. Course Description

The block covers the foundational disciplines of Genetics/Molecular Biology, Hormone Signaling, and Embryology/Development in the context of the clinical disciplines of Endocrinology, Reproduction and Cancer. A conceptual framework for understanding the fundamental genetic/molecular, cellular, and physiological mechanisms that underlie human health and disease is provided. The foundational and clinical disciplines are integrated through three major themes: 1) genetic changes (mutations) that lead to disease and their patterns of inheritance; 2) the regulation of gene expression and signal transduction at the cellular level and the phenotypic consequences of dysregulation, and 3) the normal transmission of hormonal signals between cells and organs and how disruption of communication causes disease states. Block 2 also incorporates concepts from Bioethics including informed consent, respect for autonomy, beneficence/nonmaleficence, and justice, and foundational concepts in pharmacology.

Core Disciplines: covered throughout the block.

- Genetics/Molecular Biology
- Hormone action
- Developmental Biology/Embryology
- Bioethics
- Pharmacology

Clinical disciplines: covered in specific weeks

- Endocrinology (insulin/glucagon pancreas, hypothalamic-pituitary, adrenal, thyroid, gonadal)
- Reproduction
- Cancer

2. Block Leadership

Leader: Sam Mesiano, Ph.D. (Reproductive Biology, CWRU)
Co-leader: To be named*
Block manager: Nivo Hanson

*Dr Laure Sayyed Kassem resigned as co-block leader at the end of 2023.

3. Design Team Members

Genetics/Molecular Biology

Craig Hodges, PhD (Genetics and Genome Sciences, CWRU)
Aditi Parikh, MD (Genetics; CWRU/UHHS)
Shashirekha Shetty, PhD (Genetics; CWRU/UHHS)

Hormone Action

George Dubyak, PhD (Physiology & Biophysics, CWRU)

Reproduction

Sam Mesiano, PhD (Reproductive Biology; CWRU)
Rachel Weinerman, MD (Reproductive Biology, CWRU; Ob/Gyn UHHS)

Cancer

Jacob Scott, MD PhD (CWRU/CCLCM)
Jennifer Yoest, MD (Pathology, CWRU/UHHS)

Endocrinology

Laure Sayyed Kassem, MD (Endocrinology, CWRU/VA)

Bioethics

Nicole Deming, JD (CWRU)

Development

Ron Conlon, PhD (Genetics & Genome Sciences CWRU)

4. Block Objectives:

Competency and Definition	Educational Program Objective (EPO)	Block 2 Goals	Recommended Changes
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions. Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	1. Understand the basic mechanisms of DNA replication and transcription including the impact of chromatin structure and epigenetic marks as well as the roles of *cis*-acting signals and *trans*-acting factors.	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	2. Understand the mechanisms through which gene expression is regulated at multiple steps including transcription, RNA processing and translation and the impact of mutations that lead to disease due to faulty regulation	None

Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	3. Understand the genetic basis and inheritance patterns (traditional and non-traditional) that lead to disease states including congenital defects and cancer; these include the consequences of mis-segregation of entire chromosomes, insertions, or deletions of portions of chromosomes, and point mutations that affect single genes	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	4. Understand the technical advances that led to the development of personalized medicine and describe how the results of genetic tests can be used to assess prognosis and treatment options for a growing number of diseases including congenital defects and cancer	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	5. Understand the principles and pathways of signal transduction and how disruption of intra- or intercellular communication leads to diseases including endocrine disorders and cancer	None

Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	6. Understand the normal synthesis, targets, regulation, and mechanisms of action of hormones and the molecular, cellular and tissue changes that accompany diseases that result from dysregulation of hormone production or targeting	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	7. Understand the normal development of a human embryo and describe how it is altered in developmental disorders that result from mutations or environmental factors	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	8. Understand human reproduction including male and female gametogenesis, neuroendocrine control of sexual development, hormonal control of pregnancy and parturition and methods of contraception	None

Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	10. Understand how DNA sequence alterations and epigenetic changes, defects in DNA repair pathways and dysregulation of signal transduction pathways lead to cancer, as well as the impact of cancer on public health	None
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	11. Understand cancer treatment options including surgery and radiation; cytotoxic chemotherapy; targeted therapies including those based on monoclonal antibodies and small molecules, as well as their modes of action	None
Common to all Blocks:	**EPO**	**Block 2 Goals**	**Recommended Changes**
Knowledge for Practice Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care	Demonstrates ability to apply knowledge base to clinical and research questions Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician	Recognize and analyze ethical problems in clinical medicine and biomedical research using the principles of autonomy, beneficence, nonmaleficence and justice.	None

Teamwork & Interprofessional Collaboration Demonstrates knowledge and skills to promote effective teamwork and collaboration with health care professionals across a variety of settings	Performs effectively as a member of a team	Develop and practice the knowledge and skills that promote effective teamwork across a variety of settings.	None
Professionalism Demonstrates commitment to high standards of ethical, respectful, compassionate, reliable, and responsible behaviors in all settings, and recognizes and addresses lapses in behavior	Commonly demonstrates compassion, respect, honesty and ethical practices Meets obligations in a reliable and timely manner Recognizes and addresses lapses in behavior	Understand and practice the behaviors of an ethical, respectful, compassionate, reliable, and responsible physician.	None
Interpersonal & Communication Skills Demonstrates effective listening, written and oral communication skills with patients, peers, faculty and other health care professionals in the classroom, research, and patient care settings	Uses effective written and oral communication in clinical, research, and classroom settings Demonstrates effective communication with patients using a patient-centered approach Effectively communicates knowledge as well as uncertainties	Understand and demonstrate effective communication skills for learning and clinical practice environments.	None
Research & Scholarship Demonstrates knowledge and skills required to interpret, critically evaluate, and conduct research	Analyzes and effectively critiques a broad range of research papers Demonstrates ability to generate a research hypothesis and formulate questions to test the hypothesis	Analyze, critique and present research studies from the primary literature.	None

	Demonstrates ability to initiate, complete and explain his/her research		

5. List the specific course changes you made this year based on last year's report.

What changes were made in 2022-23?	How did the changes work?	What would you like to change next year 2023-24?
General: Week 10: New IQ case introduced;	Generally successful. The IQ case was designed to integrate knowledge from all Block 2 disciplines.	This will be continued.
IQ Cases: Modifications to IQ cases for clarity and to update resources.	IQ cases continue to be improved.	We are continually updating and honing the resources and especially the facilitator guide.
TBLs/ALTs: None	None	None. The genetics and molecular biology ALTs were highly successful.
Lectures & Schedule: The schedule was set to maximize harmonization with IQ cases.	Generally good.	The schedule will be altered to account for removal of the development lectures. This will provide more flexibility and time for extra content for other areas. This is a work in progress.
Review sessions: None	None	None
End of Block Evaluations: None	None	None

6. What changes do you anticipate making to the Block next year (AY 2024-2025)?

Design team:
Members resigning: Smitha Krishnamurthi

Schedule:
The 2023 schedule will be affected by the elimination of Embryology/Development lectures. This is currently a work in progress by the design team. As with previous years, the schedule will be focused on harmonizing lectures, IQ cases, reviews, and clinical and basic science correlation sessions.

Focus on core concepts:
An ongoing problem is that core concepts are sometimes obscured by extraneous material presented in lectures. To address this problem lecturers will be asked to focus on specific core concepts and how the concepts relate to IQ cases, and Clinical Basic Correlations. Group meetings will be held with lecturers in each discipline to harmonize lecture content and emphasize core concepts. Extraneous material and personal experience are not discouraged provided that it does not soak up too much time and does not distract from core concepts. This will depend on whether the lecture occurs before or after the students have access to the IQ cases. Each lecturer will be aware of the context of their presentation from the students' perspective.

Interactive lecture tools:
Block 2 lecturers will be encouraged to include interactive tools in presentations. A goal is that all lecturers include some interactive elements in their presentations.

7. What successful, innovative components of your block that are best practices that you would like to share with the other Blocks?

ALTs were well-rated by the students. We are considering using the time gained from elimination of the development lectures to perform ALTs for other disciplines (Reproduction, Endocrinology, and Cancer.)

8. What specific changes (lectures, TBL, IQ cases, other) do you plan to make to the course next year?

Changes anticipated for next year	Reason for changes (evidence)
Goals and LOs: Audit Weekly Goals to ensure alignment with lecture LOs, IQ LOs, and ALT LOs, and that the goals provide a conceptual framework that is less granular than the specific LOs for individual sessions. Provide a more detailed roadmap of the Block curriculum.	Student feedback: Some students commented that the block covered various topics, they felt that there was a lack of connection between the topics, and it would be helpful to have a roadmap at the beginning of the block. Students wanted to have the learning objectives posted on Elentra to match those of the actual lectures.
Week 10 IQ case: Re-assess the week 10 IQ case material and the depth of knowledge required. The case should draw on knowledge gained in prior weeks' IQ cases and lectures	Student feedback: Students suggested taking away the IQ in the last week of the block. They felt that doing research for the case during the last week affected their study time and gave them a lot of new material to learn.
Re-tooling of Development Curriculum: With the loss of Development Lectures, we will ask all lecturers to integrate development into their content and provide specific reference to the relevant recorded lectures by Dr Conlon. There will also be a more granular Development OLO list for students.	Student feedback: The development material was less integrated into the IQ cases and the lectures were disorganized and complex. Embryology lectures were a bit dense and hard to follow, they suggested making the embryology lectures a bit more focused on the major concepts.
Scheduling of Clinical and Basic Sc. Corr.: The schedule will be modified to include some Clinical and Basic Science Correlation sessions during the Block and harmonized with IQ and lectures rather than concentrated during week 10. EOB reviews will continue in week 10.	Student feedback: Students suggested having the clinical and basic science correlation sessions spread throughout the block instead of the last week.

9. Please review your Block objectives. Have you added or deleted major concept areas to your Block?

The overall goals, disciplines, and concept areas of the block are unchanged.

11. Describe how faculty teaching quality was reviewed for your block. What faculty development opportunity was offered in response to student feedback?

Overall, teaching evaluations were strong. The distribution of scores for lecturers rated at the end of the block were very similar. No action is warranted at this time.

12. Response to questions on bias in your Block's curriculum.

Data not available.

13. Response to PEAC Report

The areas for improvement highlighted by the PEAC report are below and each will be addressed by the design team in preparing 2024-2025 Block 2.

Summary of Block 2 Areas for Improvement (see below PEAC report)

14. Academic Productivity

Nothing to report.

15. Acknowledgements

Thanks to:

the past and present members of the Block 2 Design Team
faculty members who contributed to the block as lecturers, IQ facilitators, and ALT facilitators.
course manager, **Nivo Hanson**, for shepherding the Block 2 team toward its goals,
support received from the office of assessment, especially **Kathy Dilliplane,**
Kelli Qua for overseeing assessments and feedback,
Celinda Miller for overseeing IQ cases and facilitators, and
the AV and IT technical support teams: **Paul Salzgeber**, **Diana Nguyen**, and **Darin Johnson**

Summary and comments: The Overall quality rating for Block 2 in 2023 remained steady at 83%.

Program Evaluation Committee Summary Report

Block/Clerkship: Block 2

Date Prepared: 12/5/2023

Evaluation Data	
Percentage of students who rated the Block/Clerkship as good or excellent	83%
Instructional methods with student ratings below <80% good/excellent	Lectures 73% Clinical/Basic Science Correlation Sessions 68%
Integration of block concepts with student ratings <80% good or excellent	Genetics 75% Cancer 79% Molecular Biology 65% Development 69% Cell Biology 73% Bioethics 61% Pharmacology 69%
Percentage of students who agreed "assessments accurately represented the content of the block."	84%
Percentage of students who agreed "faculty provided effective teaching"	91%
Percentage of students who agreed "faculty treated me with respect"	99%
Percentage of students who agreed "the overall workload during the block was manageable"	93%

Summary of Recent Trends in Longitudinal Quantative Data

- The overall rating remained consistent from last year and is at an acceptable level based on internal quality standards.
- Lecture and IQ cases had a 2-3% increase.
- ALT ratings decreased by 2% from the prior year.
- The new activity "Clinical/Basic Science Correlation Sessions was the lowest rated activity at 68% of students rating it as good or excellent.
- Hormone signaling and development were newly integrated disciplines with 84% and 69% of students rating integration was good or excellent.
- Bioethics rating decreased by 17% from the previous year, and Pharmacology integration increased by 6% from the last year.

Summary of Block/Clerkship Strengths

- The block effectively managed different topics into a cohesive unit, each segment was well planned.
- IQ cases and ALT sessions were well-integrated into the lectures and overall block content; students liked how the IQ cases were written and facilitated their learning of the block material.
- Students appreciated that there were ALT prep lectures that preceded ALT sessions; they felt prepared to actively participate in ALT sessions.
- Students enjoyed the endocrinology portion of the block that was very organized and clear; some mentioned that they liked Dr. Kassem's lectures, which was straightforward and organized.
- Dr. Conlon's lectures were organized.

Summary of Block/Clerkship Areas for Improvement

- Some students commented that the block covered various topics, they felt that there was a lack of connection between the topics, it would be helpful to have a roadmap at the beginning of the block.
- The OLOs could be released earlier, it is hard to balance between ULOs, OLOs, and learning goals from lectures throughout the week.
- Students suggested taking away the IQ in the last week of the block. They felt that doing research for the case during the last week affected their study time and gave them a lot of new material to learn.
- The development material was less integrated into the IQ cases and the lectures were disorganized and complex.
- Students suggested having the clinical and basic science correlation sessions spread through out the block instead of the last week.
- Embryology lectures were a bit dense and hard to follow, they suggested making the embryology lectures a bit more focused on the major concepts.
- Students wanted to have the learning objectives posted on elentra to match those of the actual lectures.
- There is a huge drop for Bioethics, but there are not many specific comments. Tie Bioethics with social determinants more specifically.