

## Case Western Reserve University – University Program Medical School

<b>Becoming A Doctor</b> Block 1 (5 Weeks)  Population Health, Epidemiology, Biostatistics, Health Disparities  Field Experiences Assessment Week	2 Weeks Steps2Success	<b>The Human Blueprint</b> Block 2 (11 Weeks)  Endocrinology, Reproduction, Development, Genetics, Molecular Biology, Cancer Biology  Integrative Week Assessment Week	<b>Food to Fuel</b> Block 3 (9 Weeks)  Gastroenterology, Nutrition, Biochemistry  Assessment Week	<b>Homeostasis</b> Block 4 (14 Weeks)  Cardiovascular, Pulmonary, Renal, Cell Physiology and Pharmacology  Clinical Immersion Week Assessment Week
<b>Structure</b> (Anatomy, Radiology and Histopathology)  <a href="#">Foundations of Clinical Medicine</a> (Tuesday Seminars, Communications, Physical Diagnosis, Patient Based Experiences)				

### 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 Weirnerman, 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:**

<b>Competency and Definition</b>	<b>Educational Program Objective (EPO)</b>	<b>Block 2 Goals</b>	<b>Recommended Changes</b>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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 <i>cis</i>-acting signals and <i>trans</i>-acting factors.</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>

<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>

<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>8. Understand human reproduction including male and female gametogenesis, neuroendocrine control of sexual development, hormonal control of pregnancy and parturition and methods of contraception</p>	<p>None</p>

<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>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</p>	<p>None</p>
<p><b>Common to all Blocks:</b></p>	<p><b>EPO</b></p>	<p><b>Block 2 Goals</b></p>	<p><b>Recommended Changes</b></p>
<p><b>Knowledge for Practice</b> Demonstrates knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences as well as the application of this knowledge to patient care</p>	<p>Demonstrates ability to apply knowledge base to clinical and research questions</p> <p>Demonstrates appropriate level of clinical and basic science knowledge to be an effective starting resident physician</p>	<p>Recognize and analyze ethical problems in clinical medicine and biomedical research using the principles of autonomy, beneficence, nonmaleficence and justice.</p>	<p>None</p>

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

	Demonstrates ability to initiate, complete and explain his/her research		
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**5. List the specific course changes you made this year based on last year's report.**

<b>What changes were made in 2022-23?</b>	<b>How did the changes work?</b>	<b>What would you like to change next year 2023-24?</b>
<u>General:</u> Week 10: New IQ case introduced; SSEQ practice sessions deleted.	Generally successful. The IQ case was designed to integrate knowledge from all Block 2 disciplines.	This will be continued.
<u>IQ Cases:</u> 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.
<u>TBLs/ALTs:</u> None	None	None. The genetics and molecular biology ALTs were highly successful.
<u>Lectures &amp; Schedule:</u> 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.
<u>Review sessions:</u> None	None	None
<u>SEQs:</u> None	None	Ensure SEQs harmonize with lectures and IQ cases.
<u>SSEQ exam:</u> Week 10 mock SSEQs removed and replaced with an integrative IQ case.	This was generally successful based on student feedback.	Continue to improve the activities and respond to students' suggestions. Increase guidance for faculty presenting SSEQ ideal answers and EOB reviews.
<u>End of Block Evaluations:</u> 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 Q cases, SEQs 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 is 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 into presentations. A goal is that all lecturers include some interactive elements into their presentations.

### Integrative IQ case in Week 10:

Week 10 of Block 2 in 2022 was used to actively help students prepare for the SSEQ exam. Students had the option of meeting in their IQ groups and in the same rooms on Monday and Wednesday at the usual times without facilitators. On each day a practice SSEQ question was provided and the students were expected as a group to answer the question. Despite some success, this was eliminated in 2023 and replaced with a new integrative IQ case. As the week had one case it provided extra time for final checkout. Although this was considered generally as successful, some students responded negatively, indicating that a research load and new material in week 10 distracted from studying for the SSEQ exam. The case will be adjusted to minimize new material. The students and facilitators will be informed that the cases draw on content from the previous lectures and IQ cases as an exercise in knowledge synthesis in preparation of the SSEQ exam.

## **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)
<p><u>Goals and LOs:</u> 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.</p>	<p><u>Student feedback:</u> 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. Students wanted to have the learning objectives posted on Elenra to match those of the actual lectures.</p>
<p><u>Week 10 IQ case:</u> Re-assess the week 10 IQ case material and depth of knowledge required. The case should draw on knowledge gained in prior weeks' IQ cases and lecturer. Encourage students to see the case as practice for SSEQ-type thinking. This will be combined with facilitator coaching.</p>	<p><u>Student feedback:</u> 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.</p>
<p><u>Re-tooling of Development Curriculum:</u> 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.</p>	<p><u>Student feedback:</u> 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.</p>
<p><u>Scheduling of Clinical and Basic Sc. Corr.:</u> 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.</p>	<p><u>Student feedback:</u> Students suggested having the clinical and basic science correlation sessions spread throughout the block instead of the last week.</p>

**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.

**10. Did formative (MCQs and SEQs) and summative assessment (SSEQs) in the Block support achievement of block objectives? What specific changes do you plan to make to the course next year?**

The Block 2 SEQs have undergone continuous revision over the past several years. We will continue to ensure that the ideal answer accurately, completely and succinctly answers the question; SEQs align with the course content (IQ cases, lectures, and ALTs) for the week in which they are distributed; and structuring the SEQs to be representative of SSEQs.

**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 towards 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**