Case Western Reserve University – University Program Medical School Block 7: Action Plan 2021-2022

Year 1 (July - May)

Becoming A Doctor		The Human Blueprint	Food to Fuel	Homeostasis
Block 1 (5 Weeks)	du	Block 2 (11 Weeks)	Block 3 (9 Weeks)	Block 4 (14 Weeks)
Population Health, Epidemiology, Biostatistics, Health Disparities	2 Weeks Anatomy Bootcamp	Endocrinology, Reproduction, Development, Genetics, Molecular Biology, Cancer Biology	Gastroenterology, Nutrition, Biochemistry	Cardiovascular, Pulmonary, Renal, Cell Physiology and Pharmacology
Field Experiences Assessment Week	ď	Integrative Week Assessment Week	Assessment Week	Clinical Immersion Week Assessment Week

Structure (GARLA and "Systems and Scholarship")

<u>Foundations of Clinical Medicine</u> (Tuesday Seminars, Communications, Physical Diagnosis, Patient Based Experiences)

Year 2 (August- March)

	Host Defense & Host Response	Cognition, Sensation & Movement			
	Block 5 (13 Weeks)	Block 6 (14 Weeks)			
Summer Break (10 weeks)	Immunology, Microbiology, Hematology, Oncology, Infectious Diseases, Rheumatology, Dermatology	Neurology, Mind, Musculoskeletal	Step 1 Study (6-8 weeks)		
	Assessment Week	Integrative Week Assessment Week			
	Structure (GARLA and "Systems and Scholarship")				
	Foundations of Clinical Medicine (Tuesday Seminars, Communications, Physical Diagnosis, Patient Based Experiences)				

1. Course Description:

Block 7, or "Structure", is a longitudinal block that starts in Block 1 and continues through Block 6. The major components of Block 7 and the faculty leader(s) for each include: Gross Anatomy, Radiology and Living Anatomy or GARLA (Dr. Wish-Baratz), Histology/Histopathology or HP (Dr. Ziats). Block 7 integrates basic and clinical concepts of these disciplines and a thorough understanding of each will form the framework for the basic mechanisms that underlie health and disease. The overall learning objective of this longitudinal block is to develop an understanding of macro-, micro- and ultramicroscopic human structure, nomenclature, imaging techniques, basic physical examination skills related to the topic at hand and the respective functions of normal and diseased organs, tissues and cells and to view these tissues directly and as accomplished in the clinical setting. It is believed by many that all medical science flows from an instinctive appreciation of physiology and pathophysiology.

However, a sophisticated knowledge of anatomy/radiology, biochemistry, cell biology, and basic genetics are requisite for understanding normal physiology as well as pathophysiology. The knowledge of normal gross and microscopic anatomy, as well as imaging (radiology) of these organs and tissues is necessary for appreciation of the relationships between altered structure and disturbed function. Thus, Block 7 bridges normal and diseased, and begins to prepare students for the transition from classroom to ward. If a student conceptually masters the principles of anatomy/radiology, cell biology, histology, genetics, physiology and pathology (at least), they will have mastered much of the basic science of medicine. This knowledge will be necessary to differentiate the variability (and artifacts) of normal tissues and organs from diseased ones.

Weekly Schedule: In Blocks 2, 3, and 4, the official class time in Block 7 is: HP, 10 - noon on Tuesdays; and GARLA, 10 - noon on either Tuesdays OR Thursdays. During the second year (Blocks 5 and 6), HP class time is: 8-10 a.m. on Tuesdays and GARLA class time is either 8-10 a.m. on Tuesdays OR Thursdays. In addition, faculty experts in Histology and Pathology are available from 8-10am on alternate Thursdays during year one for reviews, or content-derived sessions. Anatomy lectures are posted on canvas. This schedule varies slightly throughout the year, so it is necessary that students consult the weekly schedule on Canvas. (Note: attendance is not required at HP sessions on Thursday mornings, but students are responsible for content; attendance is required at all GARLA sessions.) Figure 1 is the regular schedule for structure (Block 7).

	Monday	Tuesday	Wednesday	Thursday	Friday
8-9		Structure M2s		Structure M2s	
9-10		Or			
		FCM M1s			
10-11		Structure M1s		Structure M1s	
11-12		Or			
		FCM M2s			

Figure 1
Schedule of Block 7 within the WR2 Curriculum

Anatomy Boot Camp:

Prior to Block 2, a dissection boot camp sets the stage for GARLA. This two-week intensive course takes place on Monday – Thursday either in the morning or in the afternoon. All dissection activities take place in-person. The 2021 memorial service took place at the Amasa Stone Chapel but was also recorded by CWRU MediaVision so that donor family members who were unable to attend could view the service remotely. Second year medical students performed at the service that was officiated by Rev. Richard Israel and, as always, he did a masterful job. Boot Camp is very well received by the students.

2. Block Co-Leaders:

Nicholas Ziats, Susanne Wish-Baratz

3. **Design Team:**

Nicholas Ziats, Susanne Wish-Baratz, Navid Faraji, Robert Jones, Greg Nemunaitis, Scott Simpson, Darin Croft, Andrew Crofton, Jay Costantini, Patti Quallich (Nivo Hanson), Michele Mumaw, Kathy Dilliplane and Rebecca Enterline.

4. Block Goals: GARLA

Competency and	Educational	Block Goals	Recommended
Definition	Program	Block 7	Changes
	Objective		
	(EPO)		
Knowledge for	Demonstrates	-Develop a three-	No change
Practice	ability to apply	dimensional understanding	recommended
Demonstrates	knowledge base to	of the structure of the	
knowledge of	clinical and	human body.	

established and evolving biomedical, clinical, epidemiological and social-behavioral sciences as well as	research questions Demonstrates appropriate level of clinical and basic science knowledge	-Apply this knowledge during their clinical clerkships and, ultimately, in the practice of medicineUnderstand the role of	
the application of this knowledge to patient care	to be an effective starting resident physician	various radiological imaging modalities in the diagnosis and treatment follow-up of diseases. Develop a foundation for interpretation of radiological images.	
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	Integrate the anatomy, imaging anatomy, pathophysiology, and pharmacologic treatment of the respiratory system with general homeostasis.	No change recommended

Competency and Definition	Educational Program Objective (EPO)	Block Goals Block 7	Recommended Changes
Common to all Blocks:			
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.	No change recommended
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.	No change recommended
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.	No change recommended

Competency and Definition	Educational Program Objective (EPO)	Block Goals Block 7	Recommended Changes
Research & Scholarship Demonstrates knowledge and skills required to interpret, critically evaluate, and conduct research	Analyses and effectively critiques a broad range of research papers Demonstrates ability to generate a research hypothesis and formulate questions to test the hypothesis Demonstrates ability to initiate, complete and explain his/her research	Analyze, critique, and present research studies from the primary literature. Conduct research studies as feasible and appropriate.	No change recommended

4. Block Goals: HISTOPATHOLOGY

Competency and Definition	Educational Program Objective (EPO)	Block Goals Block 7	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	Develop a three-dimensional understanding of the structure of the human body. Apply this knowledge during their clinical clerkships and, ultimately, in the practice of medicine. Understand the role of various radiological imaging modalities in the diagnosis and treatment follow-up of diseases. Develop a foundation for interpretation of radiological images.	None, if in-person
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	Be able to compare and contrast normal histology of organs and tissues to diseased organs and tissue. Be able to evaluate organ and tissue histology/histopathology using virtual microscopy.	Added new VM images system called PathPresenter on January 1, 2022. Need to revise all lectures and Reviews to new system and formatting all. Not all images converted, so need to redo

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	Be able to compare and contrast normal physiology versus pathophysiology of organ systems. Understand a) the role of the kidney in maintaining homeostasis, b) the interaction of the kidneys with other organ systems, and c) the pathophysiology of the major categories of renal disease and the pharmacologic agents used to treat them. Understand a) normal cardiovascular physiology and cell function and b) how cardiovascular diseases & pharmacologic therapies alter normal cardiac physiology and function at both the organ and cellular levels.	No change recommended
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	Integrate the anatomy, imaging anatomy, pathophysiology and pharmacologic treatment of the respiratory system with general homeostasis.	No change recommended

Common to all			
Blocks:			
Teamwork &	Performs effectively	Develop and practice the	No change
Interprofessional	as a member of a	knowledge and skills that	recommended
Collaboration	team	promote effective teamwork	
Demonstrates		across a variety of settings.	
knowledge and skills			
to promote effective			
teamwork and			
collaboration with			
health care			
professionals across a			
variety of settings			
Professionalism	Commonly	Understand and practice the	No change
Demonstrates	demonstrates	behaviors of an ethical,	recommended
commitment to high	compassion, respect,	respectful, compassionate,	
standards of ethical,	honesty and ethical	reliable, and responsible	
respectful,	practices	physician.	
compassionate,	•		
reliable and	Meets obligations in		
responsible behaviors	a reliable and timely		
in all settings, and	manner		
recognizes and			
addresses lapses in	Recognizes and		
behavior	addresses lapses in		
	behavior		
Interpersonal &	Uses effective	Understand and demonstrate	No change
Communication	written and oral	effective communication	recommended
Skills	communication in	skills for learning and	
Demonstrates	clinical, research,	clinical practice	
effective listening,	and classroom	environments.	
written and oral	settings		
communication skills			
with patients, peers,	Demonstrates		
faculty and other	effective		
health care	communication with		
professionals in the	patients using a		
classroom, research	patient-centered		
and patient care	approach		
settings			
	Effectively		
	communicates		
	knowledge as well as		
	uncertainties		

Research &	Analyses and	Analyze, critique and present	No change
Scholarship	effectively critiques a	research studies from the	recommended
Demonstrates	broad range of	primary literature.	
knowledge and skills required to interpret,	research papers		
critically evaluate, and	Demonstrates ability		
conduct research	to generate a		
	research hypothesis		
	and formulate		
	questions to test the		
	hypothesis		
	Demonstrates ability		
	to initiate, complete		
	and explain his/her		
	research		

5. In the grid below, please list the specific course changes you made this year based on last year's report.

What changes were made 2021-2022?	How did the changes work?	How will you follow-up on these changes next year 2022-2023?
Boot Camp resumed in-person framing lectures	Dr. Wish-Baratz provided framing lectures in week 1 and Dr. Simpson provided them in week 2 of Boot Camp.	We will continue providing in-person framing lectures in 2022.
The 2021 memorial service took place in person at the Amasa Stone Chapel but was also recorded by CWRU MediaVision so that donor family members who were unable to attend could view the service remotely. There were multiple problems with	This was an excellent idea and enabled donor family members who could not attend the service in person to view the service	This was very well received by donor family members. We will continue to record the service in 2022. MediaVision is reserved for August 26. David Peck, Director of
scrubs sizes, supplies and distribution with Cintas. Aramak was hired to replace Cintas during 2022.		Support Services, notified Aramark (the new supplier) that there would be a "spike" un usage in August. Beck has been assigned to schedule student scrubs return and distribution to ensure that everything runs smoothly in August.
HoloAnatomy/HoloNeuro lab guides were completed/adapted for all labs Block 3, 4 and 6.	Lab guide format was altered, and a uniform lab guide with a more active small group approach was adopted. The students were very pleased with the new format (compare Figure 4 evals of blocks 2 & 5 with 3,4 & 6).	All lab guides will be restructured & have uniform active small-group procedures with summary questions following many of the HoloLens scenes.
GARLA was in-person in all blocks	All sessions were "hands on."	We hope to continue inperson GARLA sessions in 2022-2023. Dr. Faraji will continue with radiology in Blocks 1-5; Dr. Jones will continue with Living Anatomy in Blocks 3 and 4. In Block 2, Living Anatomy will have a different instructor for each session: Dr. Jones, (thyroid); Dr. Scarberry (male repro); Gladys Stefanek, Clinical Nurse Specialist (breast); Dr. Stacie Jhaveri (female repro).

What changes were made	How did the changes	How will you follow-up		
2020-2021?	work?	on these changes next year 2020-2021?		
eAnatomy was discontinued in the radiology room.	Dr. Faraji used Radiant (a DICOM viewer) in class and students used resources on Canvas for home viewing.	Dr. Faraji will continue to use Radiant for class and hopes students will be able to use Path Presenter at home.		
Greg Nemunaitis (PM&R CCF) instructed in all Block 5 Living Anatomy session and brought 8 residents to each session.	Sessions were excellent but too many physical exam tests were covered.	We will reduce the number of physical exam tests and focus on the most important exams.		
GARLA was rolled out in Block 6 2021-2022	This was very well received by the class of 2024.	We hope to continue refining content as we gain experience.		
Block 6 Radiology continued with Jay Costantini (CCF) in-person. Dr. Costantini had been using eAnatomy which worked well but was discontinued.	Dr. Costantini managed with materials on Canvas but plans to use "MRI Master" in 2022-2023. MRI Master has labelled images of cross-sectional anatomy in different planes as well as pathologies.	We will follow-up with Dr. Costantini to ensure he is able to achieve his learning objectives using MRI Master.		
Block 6 Living Anatomy was rolled out in-person	We had different facilitators representing several specialties each week including Ophthalmology, ENT, and Plastics. The focus was on case discussions and physical diagnosis rather than ultrasound.	Most Living Anatomy sessions and facilitators will remain the same this year. We are assessing the possibility of doing a session on swallowing rather than carotid doppler ultrasound for the last session.		
HoloNeuroAnatomy	Students learned using HoloNeuroAnatomy for the first time.	This will be continued in 2022-2023. We want to explore the possibility of a Neuroanatomy Boot Camp		
Exams: HoloLens practical exams were given remotely.	The remote exam in Block 5 had a Wi-Fi glitch which was quite challenging. All other exams ran smoothly. We will enable students with technical difficulties/concerns to take in-person exams.	Changes were made after the B5 exam. At the present time we plan to continue to give the HoloLens practical exams remotely. UTech will continue to run the exams and assist as needed. In-person practical exams will be available for students who have technical concerns/difficulties.		

What changes were made 2020-2021?	How did the changes work?	How will you follow-up on these changes next year 2020-2021?
The written exams were administered in-person.	In-person written exams worked well. They are in hybrid format in part on ExamSoft and in part on paper.	Written exams will continue to be administered in person.
HoloLens administration was transferred from the Interactive Commons to UTech.	UTech has done an outstanding job!	UTech will continue learning and improving and we will continue feeling grateful for such an outstanding team.
HoloAnatomy Ambassadors were created	This is a very helpful resource. These students volunteer their time to demonstrate HoloAnatomy and GARLA to interested visitors.	We will recruit a new cohort of ambassadors from the class of 2026.

6. In the grid below, please list the specific course changes you made this year based on last year's report.

What changes were made 2021-2022?	How did the changes work?	How will you follow-up on these changes next year 2021-2022?
Histopathology, Blocks 1-6, reviews were done by Zoom, lecture were done in-person	Zoom seems to work for reviews although attendance is low, average 10 students	Will continue under otherwise notified with same faculty, some faculty have moved so replacing
Histopathology, New VM imaging system called PathPresenter	Changes acceptable but still a learning curve	PathPresenter system is mor robust, access to our Institutional slides (~1000) and Public slides (~5000

7. What changes do you anticipate making to the Block next year (AY 2021-2022)?

- All sessions will have uniform lab guides with summary questions
- For HP, additional slides to add or replace

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

- HoloNeuroanatomy was implemented and worked well
- For HP, we have been able to correlate Histopathology within the context of the blocks as well as IQ cases.

9. 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)
HoloAnatomy will be presented in a uniform small group learning format. Faculty/TAs circulate and answer questions.	GARLA is a new approach to teaching anatomy, and we are still learning how to best teach/learn in this format.
Histopathology- new Virtual microscopy system	Current company will no longer support our image base, moved to new system supported by Cancer Center and Curriculum

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

No

11. Did formative and summative assessment in the Block support achievement of block objectives?

Yes

What specific changes do you plan to make to the course next year?

Changes anticipated for next year	Reason for changes (evidence)		
Dr. Jhaveri will replace Dr. Jones for	She is an OB/GYN		
Female repro.			
We will reduce the number of cases in B5	Too many cases were covered, and many		
Living Anatomy	were not necessary at the level of second		
	year medical students.		
Histopathology	Minor changes with lectures/reviews with		
	new faculty.		

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

Faculty teaching quality was assessed via student feedback at the end of each block. Students appreciate small group teaching with residents for Living Anatomy and Radiology. Students prefer small group independent learning instead of a more formal lecture format in HoloAnatomy. Lab guides were rewritten per student feedback. Students appreciate access to teaching assistants during Boot Camp.

Histopathology: Histopathology Faculty evaluations at mid- and end-of block, also at feedback sessions. Faculty evaluations reviewed by Block leader and discussed with individual faculty. Note: very low level of input from students, most often zero evaluations or one to two evaluations. Feedback sessions indicated only minor concerns from students.

13. Response to PEAC Report

No new recommendations from PEAC were received for GARLA or HP

14. Scholarly Accomplishments

Publications:

Deming, N., Singer, M., Baratz, G., Wish-Baratz, S. (2021). Matriculating Students' Opinions on Cadaveric Dissection: Maintaining Tradition in Changing Times". <u>Med Sci Educ</u>. 31(1), 41-44. doi: 10.1007/s40670-020-01139-0.

Baratz, G., Sridharan, P.S., Yong, V., Tatsuoka, C., Griswold, M.A., Wish-Baratz, S. (2022). "Comparing Learning Retention in Medical Students using Mixed-Reality to Supplement Dissection: A Preliminary Study. <u>Int J Med Educ.</u> 13, 107-114. <u>doi: 10.5116/ijme.6250.0af8</u>.

Presentations:

Thom, M.L., O'Neill, S.J., Crofton, A.R., Wish-Baratz, S. "GARLAQs vs. Multiple Choice Questions: Do First-Year Medical Students Perform Similarly on their Anatomy Examinations?" Poster presentation at American Association of Anatomists annual meeting at Experimental Biology. Philadelphia, PA. April 4, 2022.

Rahawi, A.H., Crofton, A.R., Simpson, S.W. Wish-Baratz, S. "Evaluation of a Mixed Reality Approach to Teaching in a Physician-Associate Gross Anatomy." Poster presentation at American Association of Anatomists annual meeting at Experimental Biology. Philadelphia, PA. April 4, 2022.

O'Neill, S.J., Galbraith, G., Enterline, R., Wish-Baratz, S. "Touching a Nerve: A New Approach to Mixed Reality Anatomy." Poster presentation, International Association of Medical Science Educators (IAMSE) Conference, Denver, CO. June, 2022.

15. Acknowledgements:

We could not have realized this curriculum without the devotion of the GARLA design team and anatomy faculty/staff including Navid Faraji, Darin Croft, Scott Simpson, Andy Crofton, Bryan Singelyn, Rebecca Enterline, Bob Jones, Anastasia Rowland-Seymour, and Lisa Navracruz, Navid Faraji, Greg Nemunaitis, and Jay Costantini.

We thank Patti Quallich for all her efforts and patients to make Block 7 a success. We also thank Nivo Hanson her assistance in Block 7. Special thanks to Minoo Darvish who worked to figure out the scheduling for this extremely complex curriculum.

Many thanks to Michele Mumaw and Kathy Dilliplane have been invaluable in their support and assistance during the exam process. Rebecca Enterline, and the anatomy teaching assistants for the enormous effort they put forth during the many exam procedures (i.e., set-up, administration, and grading).

We are grateful for the help of <u>all</u> members of UTech and particularly Victor Guinto, Megan Slabach and Paul Salzgeber.

We are also grateful to the IC team: Mark Griswold, Erin Henninger, James Gasparados, Rob Gotschall, Jeff Mlakar, Henry Eastman, Sue Shick and Anastasiya Kurylyuk for their partnership and ongoing help and support.

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Finally, we want to thank Gillian Michaelson and Ajay Potluri, our SCME representatives, who have guided us and assisted us in improving the curriculum, recruiting and leading HoloAnatomy Ambassadors and supported us when we have sought student input.

Block 7, Longitudinal Themes AY 21-22

At the end of each Block we surveyed students on their perceptions of Longitudinal Themes. Numbers reflect the proportion of class who rated each element highly; across a 4-year period.

Each survey was sent one initial email with 2 follow-up reminders.

AY 2021-22 Responses/Expected: Block 1: 184/184 (100%); Block 2: 182/184 (99%); Block 3: 183/183 (100%); Block 4: 183/183 (100%); Block 5: 174/182 (96%); Block 6: 177/182 (97%)

Percentage of Students who rated "Very Good/Good" or "Excellent"

Block 7: Long	itudinal Themes			
BI	ock 1	97	20	16
Longitudinal Themes Components	2018-19	2019-20	2020-21	2021-22
	%	%	%	%
GARLA		78	55	80
Histopathology	70	91	70	82
Bioethics	76	81	71	71
BI	ock 2		5	
GARLA		58	56	59
Histopathology	45	65	66	62
Bioethics	52	65	52	60
BI	ock 3		10	
GARLA		54	44	88
Histopathology	80	80	85	87
Bioethics	52	61	37	80
BI	ock 4			
GARLA		55	59	84
Histopathology	81	76	64	80
BI	ock 5			
GARLA		51	47	49
Histopathology	67	73	75	72
Bioethics	18	22	43	43
BI	ock 6		•	
GARLA		52	62	71
Histopathology	71	74	57	86
Bioethics	67	62	67	71

The rating scales in Blocks 1 & 2 & 5 were Poor-Fair-Average-Very good-Excellent, Blocks 3 & 4 & 6 were Poor-Fair-Good-Excellent.

The wording of the questions in Blocks 3 & 4 & 6 was changed to:

Rate the quality of your overall educational experience in GARLA

Effectiveness of Histopathology lectures