

**Block 2 The Human Blueprint**  
**Case SOM WR2**  
**Review and Action Plan Class of 2012**  
**Block Leader: Georgia L. Wiesner, MD**  
**Block Co-Leader: James Bruzik, PhD**

Primary Content Areas: Cancer Biology, Development (Embryology), Endocrine, Genetics, Molecular Biology, Reproductive Biology.

Longitudinal Content Areas: Cell Biology, Histopathology, Anatomy

**Design Team Members:**

- Joseph Bokar, MD, PhD (Cancer Biology)
- Jim Bruzik, PhD (Co-lead and Molecular Biology)
- Ron Conlon, PhD (Development)
- Christine Curtis, PhD (Genetics)
- Angelina Gangestad, MD (Reproductive Biology)
- Hanspreet Kaur, MD (Clinical Immersion/Cancer Biology)
- Smitha Krishnamurthi, MD (Cancer Biology)
- James Liu, MD (Reproductive Biology)
- Kathleen Molyneaux, PhD (Development)
- Thomas Murphy, MD (Endocrine)
- Georgia Wiesner, MD (Lead, and Genetics)

**General Comments:**

Block 2 curriculum was presented for the third time to Case Medical Students from August 18 to October 31, 2008. The six different content areas of the block include Cancer Biology, Development (Embryology), Endocrine, Genetics, Molecular Biology, and Reproductive Biology and are presented along with the three longitudinal content areas of Cell Biology, Histopathology, and Anatomy. The major concepts are taught as an integrated story of human development and growth, emphasizing the interdependence of basic biologic mechanisms in human health and disease. However, the number and breadth of these disciplines are both a strength and a weakness of block 2. The integrated nature allows the students to build a scientific framework for subsequent basic science and clinical studies. This means that the material is primarily introductory, but, for students who have had limited scientific exposure prior to medical school, encountering multiple concepts within 10 short weeks of instruction can be challenging.

There were changes in the make-up of the design team for Block 2. Dr. James Bruzik agreed to co-lead the block along with Dr. Wiesner. This change has helped the general organization and flow of the curriculum material. Dr. Derek Neilson, who was the leader of the clinical immersion (CI) and teacher for Genetics discipline left the institution in summer 2008. Dr. Hanspreet Kaur, medical oncologist at UHC joined the team as the leader of the CI week and Dr. Christine Curtis,

cytogeneticist at UHC, added lectures and content in Molecular Biology and Genetics. In addition, Dr. Thomas Murphy, leader of Endocrine discipline, resigned from the design team at the end of the block. He will certainly be missed, as he nearly single handedly re-wrote the entire Endocrine curriculum for WR2. Dr. Ajay Sood, medical endocrinologist from UHC, has joined the team.

The CI week was held in week 8 of the block, instead of week 10 as in the past. This change was necessary to accommodate the travel schedules of essential CI faculty.

### **Fulfillment of Action Plan from Previous Year:**

Several areas had been targeted for improvement in the curriculum based on the feedback from Class of 2012, Block 2 facilitators, WR2 Block leaders, and the Block 2 design team:

1. Reconstruct and refine week 1 to focus on basic scientific and cell biology concepts. Week 1 was entirely redesigned to provide the student's with basic concepts before the self-learning IQ sessions in week 2. The IQ groups were eliminated in week 1 and the time was reassigned to Cell Biology, and Molecular Biology, Genetics and Endocrinology. Introductory sessions were developed for Endocrinology and Genetics and study guides were added to promote out of class learning time. In order to prepare the students for the IQ cases, one IQ case that had been taught previously in week 1 was developed and presented as a large group lecture. The lecturer, Dr. Joseph Bokar, reviewed the basic material, but also modeled the type of inquiry that the students would need to master in their IQ experience.
2. Improve the communication about the goals and expectations of the block.

A set of "trackable" goals for each week was developed for the Block 2 Course Guide. These goals supported the learning objectives attached to each IQ or IS group and helped the students to manage their study time. An Overview lecture was also added to week 1 that described the block and plan in more detail than in previous years.

3. Work with the Assessment Committee to assist students in preparing and studying for the SSEQ and MCQ examinations.

We provided input to Dr. Klara Papp and the Assessment Committee workshop for students on the SSEQ examination. In addition, the block faculty were provided blinded submissions from student answers to the SEQs. However, this last step did not occur until late in the block, and the impact on the student learning is not clear.

4. Continue progress in integration of disciplines of Block 2 in Inquiry Groups and Interactive Sessions. Re-evaluate Genetic and Development content throughout the Block; improve the logic of the order of presentation and integration with all other disciplines.

We took the opportunity of reviewing the Genetic and Development curriculum to re-evaluate each of the disciplines in the block.

The Development lectures had been given in a relatively short block of time in previous years and this year the lectures were spread over a 3 week period. The Genetic themes were adjusted to coincide with the concepts in the IQ groups as well as the Molecular Biology curriculum.

### Results for Yr 2008 Class of 2012

Table 1 shows the ratings for each specific Block 2 discipline and Block 7 structure for Class of 2010, 2011 and 2012. Significant improvement was seen in the two disciplines previously rated as "Good" (Development & Genetics).

**Table 1 Rate the extent to which the following concepts were integrated in this Block and enriched your understanding:**

	<b>Class of 2010</b>	<b>Class of 2011</b>	<b>Class of 2012</b>
Cancer Biology	n/a	5.0	5.0
Development	n/a	3.1	4.1
Endocrine	n/a	4.8	5.4
Genetics	n/a	3.4	4.1
Molecular Biology	n/a	4.2	4.2
Reproductive Biology	n/a	4.3	4.6
Anatomy	n/a	3.0	3.7
Histopathology	n/a	3.7	4.6

Ratings: Poor = 1, Fair = 2, Good = 3, Very Good = 4, Excellent = 5, Outstanding = 6

### Student Assessment/SSEQ Examination

The SSEQ final examination was given in week 11 of Block 2. It consisted of five clinical scenarios with 4 to 5 subquestions for a total of 20 subquestions: 3 subquestions were devoted to each of the six disciplines (Cancer, Endocrine, Development, Genetics, Molecular Biology, and Reproduction), and 1 subquestion each in Cell Biology and Histopathology. We included suggested length limits (in terms of the number of lines of text) in each of the subquestions. Most students used all the available time (4hrs) plus the additional hour to complete the examination. The answer for each subquestion was read and graded by a design team member and rated as Meets Expectations, Borderline for Meeting Expectations or Does Not Meet Expectations. Each grader devoted approximately 8 to 10 hours grading one subquestion. Scores were released to students within 5 weeks of the exam.

Students in the Class of 2012 that received a "Does Not Meet" evaluation for the SSEQ examination as a whole will take a similar remediation examination in June of 2009. Dr. Wiesner, as block leader, will meet with each of the students and their Society Deans to develop an individualized study plan. The remediation examination was written at the same time as the initial

SSEQ exam in order to develop an exam that is similar in timing and concepts as the main examination.

### **Areas of Improvement and Action Plan Recommendations for Block 2 Class of 2013 in 2009**

1. Continue our progress in the integration of Block 2 IQ and IS sessions.
2. Improve the assessment for the block. This should include:
  - a review of the SEQs for each week to match the weekly content and overall goals. In addition, the SEQs should help the students study for the final SSEQ exam.
  - review, edit, and write additional MCQs for each week.
3. Institute new features to the block (based on design team & student input):
  - add an SEQ review to the weekly Thursday review session. These sessions will focus on the SEQs from the previous week.
  - use audience response system (ARS) in IS groups and review sessions. This system has not been widely utilized. Multiple studies have demonstrated that the effective use of an ARS can greatly improve retention of material delivered in a large group (lecture) format.
  - consider providing sample SSEQs to the students at the mid-point in the block for self study. Many students have expressed concern that they were not prepared for the type of assessment that they would be given. This exercise would allow the students to experience the format of the exam ahead of time.
4. Continue to improve the Medium Size Groups (renamed Expert Inquiry or EQ groups). This includes:
  - Developing a Molecular Biology web resource for the technology that the students need to be familiar with.
  - Have activities performed in the EQ groups as opposed to having "homework problems" to complete and bring in. This was tried in the last EQ session of 2008 (Breast Cancer - Microarray Analysis) with students working in small groups to answer problems given that day. In addition, some of the problems were based on interpretation of clinical results employing the technology that was highlighted in the session. The feedback from this session was very positive.
  - Maintain the journal clubs (3 total). Change the format so that there are fewer students presenting on any given day. Reading of primary literature is critical in the educational process as well as in preparation for the research proposals that students will have to write later in the curriculum.
5. Re-evaluate the clinical activities in the CI week.
6. Provide additional optional lectures on basic Embryology and Development. Consider options to bring Development content longitudinally to each block, where these concepts can support the teaching of subsequent concepts.

7. Outside review of the IQ cases and SEQs by block 2 facilitators and other SOM faculty.

### **Block Infrastructure and Administrative Support:**

- It is difficult to recruit the number of faculty that we need to run effective EQ group activities. At the current class size, we are running 10 groups at a time, each with one basic scientist and one clinician (20 faculty total).
- There seemed to be an increase in the number of "substitute" facilitators for the IQ and EQ groups compared to previous years. This may be a reflection of the faculty intensive WR2 curriculum.
- Administratively, the system is at its limits. The course managers need more assistance in terms of help with the enormous amount of work that putting a block together entails.
- The meeting rooms for small groups and medium sized groups are in short supply. We have a lecture-based physical plant with a PBL curriculum.

### **Recommended Resources:**

- Dedicated web designer. This person (not currently in the computing office) would be the point of contact to work with faculty on items such as an on-line Molecular Biology technology resource, and other projects not limited to the first year curriculum.
- Support for semi-annual half day retreat for the Block 2 design team, longitudinal block 7 members, and the assessment team. These would "bookend" the actual course, with pre-activities focused on planning and curricular development and the post-activities focused on detailed review and planning of the curricular materials. These retreats would greatly help with faculty skill building and development of innovative curriculum methods.
- At present, the design team as a whole has little direct support for their contributions to the curriculum. Support equivalent to the IQ facilitator stipend would be greatly appreciated.

### **Opportunities for student to address Competencies:**

As expected, the primary competency that is fostered by the block 2 curriculum is in the area of medical knowledge. The students can address their growth in this competency area by monitoring their progress on the weekly SEQs and MCQs, by completing each study guide and discussing their answers with the faculty, by completing the pre-EQ learning modules and by actively participating in each EQ group. In addition, the students can work for early integration of basic science and clinical skill development in the CI week by actively researching the patient problem and developing a problem list and differential diagnosis.

Other opportunities for competency development offered by the block 2 curriculum include the development of professional habits for skills in life long learning and professional development, interpersonal and communication skills, and professionalism. By developing a framework of medical information, the students will build their personal approach to learning new material that

will serve them throughout their careers. Likewise, the IQ experience will acquaint the students to the importance of teamwork and communication within groups that will be essential to their future work. In addition, the weekly exposure to new research concepts in the block 2 disciplines will help the student developing their plans for research and scholarship.

**Closing Comments:**

The Class of 2012 was the third group of SOM medical students to complete the Block 2 curriculum. In general, the content and pacing of the block is much improved as is the general instruction and organization for the students. As a group, the block 2 faculty are highly professional teachers who are dedicated to the student focused learning approach of the WR2 curriculum. We appreciate the opportunity to work with the physicians of tomorrow and to participate in developing and improving the WR2 curriculum.

Respectively submitted,

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Case SOM WR2