General Description:
The rotation will include formal lectures, observation of processing within the clinical laboratory, and time for directed reading and discussion. Small, focused projects may be identified for trainees indicating an interest. The Cell Therapy (CT) rotation is a one-month Clinical Pathology (CP) advanced elective. This rotation within the Division of Transfusion Medicine builds upon the introduction to CT that the resident receives in the three-month Blood Banking/Transfusion Medicine rotation. The field of CT is rapidly expanding, and specialists in Laboratory Medicine/Pathology and Transfusion Medicine will be playing an increasingly important role in its practice.

Goals and Objectives:
Upon completion of this rotation, the resident will gain:
- An understanding of the various methods of routine (e.g., volume reduction, red cell depletion, thawing) and advanced (e.g., cell selection by immuno-magnetic selection or counter-flow centrifugal elutriation) cell processing with a focus on processing and storage of hematopoietic progenitor cells from marrow, peripheral blood, and umbilical cord blood.
- An understanding of quality control in a clinical cell processing laboratory including cell enumeration (e.g., nucleated cells, CD34+ cells, others), viability (e.g. microscopy- and flow cytometry-based), functional evaluation (e.g., CFU-GM), and detection of microbial contamination (e.g., sterility, endotoxin).
- A basic knowledge of the regulatory aspects of routine and advanced clinical cell processing, including the role of the Food and Drug Administration and professional organizations (e.g., AABB, FACT).

The learning objectives below reference the corresponding ACGME core competencies: Patient Care (PC), Medical Knowledge (MK), Professionalism (Prof), Communication Skills (CS), Practice Based Learning and Improvement (PBLI), and Systems-Based Practice (SBP).

- Understand general processing and cryopreservation of hematopoietic progenitor cells (PC, MK).
- Comprehend the major aspects and importance of quality control in the cell processing laboratory, including cell counting, cell viability, and sterility (MK, PC, SBP).
- Appreciate the concept and kinetics of neutrophil, platelet, and red cell engraftment (PC, MK).
- Understand methods of immunomagnetic cell selection and the rationale for its uses (PC, MK).
- Comprehend the principles of cryopreservation theory (PC, MK).
- Recognize and manage side effects or reactions to transfusion of cell therapy products (PC, MK, CS).
- Understand the benefits, alternatives, and roles of various graft options in hematopoietic cell transplantation (PC, MK, PBL).
- Understand the ethical issues involved in cell therapy (PC, Prof).

Assigned Reading:
2) Practical Handbook of Cellular Therapy Cryopreservation, AABB, 2015.
   Selected chapters from:
4) Basic Principles in Flow Cytometry, AABB, 2013

Optional Reading:
- Additional reading will be assigned based upon the trainees interests and individual goals for the rotation.

Call Duties: Resident will take call after office hours for 1 week of the month.

During the rotation, the trainee is expected to join the following conferences:
- Clinical Pathology Conference: Tues 12-1 PM (weekly)
- Transfusion Medicine Lecture Series: Tues 1-2 PM (weekly)
- Lab Medicine/Pathology Grand Rounds: Wed 8-9 AM (weekly)
- Immunohematology Conference: Wed 3-4 PM (bi-monthly)
- Transfusion Medicine Breakfast Meeting: Thurs 830-10 AM (weekly)

Other Requirements:
- CP case logs should be emailed to the rotation director throughout the rotation to meet program requirements. Dr. McKenna will review all cases during the rotations and email feedback to residents. Resident is responsible to upload to the case log repository (available through the resident intranet).

Assessment methods:
Resident performance on this rotation will be assessed by:
- Formative feedback provided by attending physician(s)
- Performance evaluation completed by attending physician(s) at the end of the rotation