**Module 2: Systems Immunology: Theory, Methodology & Prospects**

**Weeks 2 & 3**

**Week 2, Day 1;** Topic: *Human Immunology 2.0: Era of Systems Immunology*

**Activities:**

* **Lecture by Dr. Tomic:**
  + The session will begin with a discussion based on the questions submitted in Module 1. Dr. Tomic will use these questions to introduce the concept of Systems Immunology, explaining how this approach, coupled with AI, can provide answers to complex questions about the immune system.
  + The lecture will cover key concepts, methodologies, and the importance of Systems Immunology in understanding the immune system at a systemic level.
  + Students are encouraged to take notes and ask questions to clarify their understanding of the material.

**Learning Objectives:**

* Bridge the foundational knowledge from Module 1 with the advanced concepts of Systems Immunology.
* Understand how Systems Immunology and AI can be applied to address real-world immunological questions.
* Gain insight into the methodologies and tools used in Systems Immunology research.

**Expected Outcome:**

* Students will gain background information about Systems Immunology, preparing them to engage with research publications in the field.

**Day 2;** Topic: **Bridging Science and Practice in Human Systems Immunology**

**Activities:**

* Lecture by Dr. Tomic introducing current applications of systems immunology approaches in infections and vaccinations, discussions on challenges and prospects
* Assignment of Publications:
  + The class will be divided into six groups, each consisting of 4-5 students.
  + Each group will be assigned one publication related to Systems Immunology, selected for its relevance and importance in the field.
* Guidelines for Group Work:
  + Students will be provided guidelines on analyzing the assigned publications.
  + The guidelines will include instructions on preparing a presentation that summarizes the publication’s key findings, methodology, and relevance to the broader field of Systems Immunology.
* **Q&A Session:**
  + Open the floor for any questions regarding the papers, the group assignments, or the presentation guidelines.

**Learning Objectives:**

* Develop the ability to analyze scientific literature in Systems Immunology critically.
* Collaborate effectively in a team to synthesize and present complex information.
* Apply theoretical knowledge from the lecture to real-world research.

**Expected Outcome:**

* Students will be organized into groups and clearly understand their assigned publications and the expectations for their presentations.

**Week 3: Independent Group Work**

Topic: *Collaborative Research Synthesis: Application of Systems Immunology Approaches in Real-world Examples*

**Activities:**

* Self-Paced Group Work:
  + Each group will work independently to analyze their assigned publication, following the provided guidelines.
  + Groups will collaborate to prepare a presentation that effectively communicates the critical aspects of their publication.
* Instructor Support:
  + Dr. Tomic will be available for consultations if groups need clarification or guidance on their work.

**Learning Objectives:**

* Enhance skills in literature review and scientific presentation.
* Foster teamwork and collaborative problem-solving within the context of Systems Immunology.
* Prepare to present and discuss complex scientific ideas with peers.

**Expected Outcome:**

* Each group will have a well-prepared presentation ready for delivery the following week, demonstrating their understanding of the publication and its significance in Systems Immunology.