Chemistry of Anticoagulants

Schedule:

Week 1: Introduction to the topic; general mechanism of blood coagulation.

Week 2: Classical anticoagulant compounds I (antithrombin, heparin and its derivatives).

Week 3: Biosynthesis and structure of heparin.

Week 4: Heparin-analogue pentasaccharides (path to the production of Fondaparinux).

Week 5: Synthesis of Fondaparinux.

Week 6: Structure–activity relationships of synthetic heparin oligosaccharides.

Week 7: Non-glycosaminoglycan-type heparin analogues (structure and synthesis of idraparinux and idrabiotaparinux).

Week 8: Synthesis and biological effects of sulfonic acid-containing idraparinux analogue pentasaccharides.

Week 9: Synthesis of the iduronic acid part of heparin-type anticoagulants.

Week 10: Recent results in the synthesis of heparin analogue compounds.

Week 11: Classical anticoagulant compounds II (vitamin K antagonists – structure, synthesis, action).

Week 12: Direct thrombin inhibitors (argatroban, bivalirudin, hirudin, lepirudin).

Week 13: Direct Xa inhibitors.

Week 14: Other anticoagulants and non-drug anticoagulants (aspirin, citrate, EDTA, oxalate).